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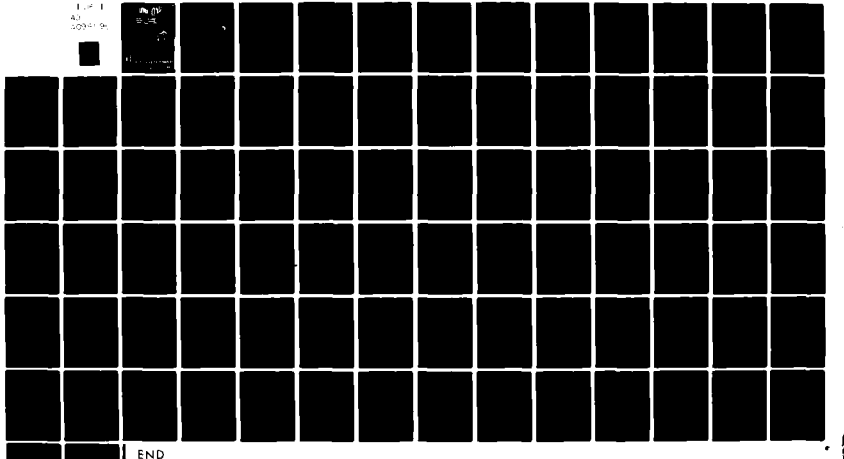

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Final Report

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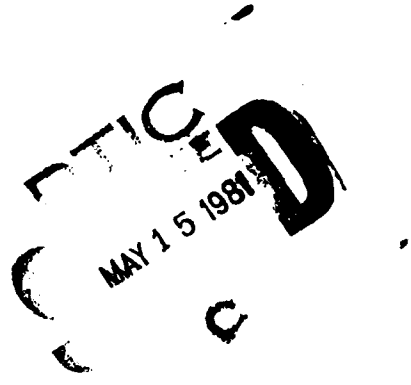
CONTINUITY OF GOVERNMENT FOR POSTATTACK RECOVERY: ECONOMIC/INDUSTRIAL ASPECTS

By:

Richard Laurino and Francis Dresch

Prepared for:

Federal Emergency Management Agency
Washington, D.C. 20472



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The need to control economic/industrial activities must shape government actions prior to, during and after a nuclear attack. Recent changes in the strategic environment and newly recognized requirements for early recovery demand modification of existing economic/industrial policies to encompass continuity of action and succession of authority in the private sector including industry, finance and other support services. Requirements are discussed dynamically under evolving environments and alternative policies appropriate for different phases of postattack recovery.

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DETACHABLE SUMMARY

CONTINUITY OF GOVERNMENT FOR POSTATTACK RECOVERY: ECONOMIC INDUSTRIAL ASPECTS

Final Report, November 1980

by Richard Laurino and Francis Dresch
Center for Planning and Research, Inc.
Palo Alto, CA and Washington, DC

for Federal Emergency Management Agency
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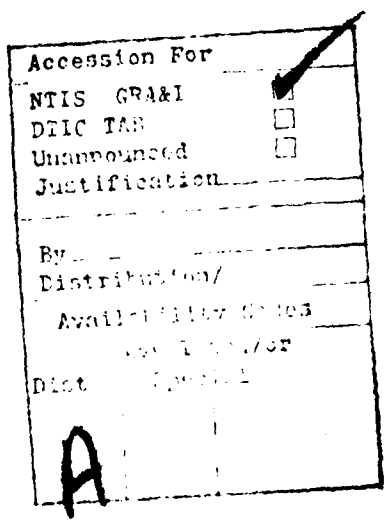

Background

The need to control economic/industrial activities must shape government actions prior to, during, and after a nuclear attack. To meet this need, current government planning includes measures for managing resources (e.g., allocations, priorities, and rationing) and for stabilizing the economy (e.g., wage and price controls and credit controls). However, owing to recent changes in the strategic environment and to newly recognized requirements for early postattack recovery, a modification of existing economic/industrial policies and plans appears to be needed.

Planning for continuity of government has been concerned primarily with protecting the sites of government, establishing the legal succession of authority, defining and allocating emergency powers, and preserving the executive and judicial authority for implementing emergency measures. Current thinking suggests that government planning should also be concerned with continuity of action and succession of authority in the private sector, including industry and financial and other support services.

Alternative Postattack Recovery Policies

The continuity-of-government requirements for economic/industrial activities would be determined in large part by the overall postattack recovery policy that is adopted. Although only one such policy (long-term conventional recovery) has been considered seriously in government planning, there are a number of other policies that might prove to be better, depending upon the postattack environment. To explore the implications of continuity of government a set of alternative policies has been devised (see Table 1): Long-term domestic recovery, short-term domestic recovery, economic recovery based on outside assistance, and economic recovery with support of military and foreign aid activities.

Each policy is based on assumptions that would determine its utility in a postattack environment. For long-term dometic recovery, it is assumed that the short-term recovery problem is manageable; this would require, among other factors, that a significant part of the metropolitan-area industry had survived the attack. An early and acceptable end to the conflict is also assumed, so that no significant external demands are made on the U.S. economy.

For short-term domestic recovery, it is assumed that the problems of survival in the first 1 to 2 years are dominant and that resources are directed achieving a small, balanced industrial capability at the expense of long-term growth. Here also,

Table 1

POSTATTACK RECOVERY POLICIES

Policy	Objectives	Key Assumptions	Production Emphasis
Long-term recovery	Prewar GNP ASAP	Acceptable war end SMSA industry Min. trade and aid Standard processes	Capital buildup Low private consumption
Short-term recovery	Small, stable economy ASAP Balanced recovery base	Acceptable war end Min. SMSA industry Min. trade and aid Nonstandard processes	Subsistence production Capital expedients Rationalized production and use
Outside assistance	Recovery with trade and aid	Favorable war end Available foreign markets	All feasible products Subsistence consumption Max. capital imports
Military and foreign aid support	Protect and restore U.S. and allies Max. trade and aid	Indeterminate war end SMSA industry Military capability	Military production Subsistence consumption

it is assumed that the conflict ends on terms acceptable to the U.S. and that there are no significant external demands on the economy.

A policy of economic recovery based on outside assistance rests on the assumption that the U.S. is able to trade portions of its remaining assets and domestic production (e.g., food and raw materials) for foreign producer durables and some essential consumption items (e.g., refined petroleum products). This option would require a favorable end to the conflict, allowing international trade relatively free of coercion by enemy powers.

A policy of economic recovery with support of military and foreign aid activities presupposes the continuation of some form of significant conflict. The recovery effort would be directed toward providing minimal subsistence for the population and reestablishing the necessary military support industry.

Dynamic Aspects of Economic/Industrial Recovery

Continuity of government implies that government authority and the capacity for action must be maintained throughout the crisis, transattack, early postattack, and final recovery phases of the war. The postattack recovery would proceed through a series of four major steps.

Step 1 is preserving the residual systems status. This would include actions taken immediately after an attack to maintain or reestablish local, state, and Federal authority. Government must be able to provide authoritative guidance as to: duly constituted leadership; local, regional, and national viability; specific in-place economic stabilization and other measures that are applicable; etc. Other actions would include the identification of remaining resources and their preservation and protection for later use.

Step 2 is general guidance of the economy. This would include reestablishment of general controls over the economic/industrial system. Efforts would include: assessment of capabilities and needs, establishment of general priorities, guidance on allocation and use of essential resources, and provision of legal authority and general guarantees to those engaged in essential production. At this stage, the control of activities would still be largely in the hands of local or state governments and the private sector. The inefficiencies of operations would probably cause an unacceptable waste of scarce resources and even a net reduction in output and capacity. The organization and infrastructure needed to prevent the further deterioration of economic conditions to nonviable levels would then have to be developed quickly.

Step 3 is the positive control of economic/industrial processes. This would begin when sufficient information on resources and needs had been assembled and when sufficient management capability was available to make detailed control feasible. Measures would include the requisitioning of private property, the issuance of production and limitation orders, and the control of credit and of access to private deposits. These comprehensive government controls are designed to stabilize the economy and increase essential production to provide a sound basis for long term recovery.

Step 4 is the relaxation of controls. After economic stabilization had been achieved and the country and its capital base had been sufficiently restored to assure long-term recovery, government controls would gradually be relaxed to encourage a return to peacetime incentives. Important issues to be addressed at this stage would include the resolution of problems of legal ownership and legal obligations, loss equalization, and tax and fiscal policies.

Since the country can be maintained at each of the first three stages for only a limited period, the ability of the government to make the necessary transitions at the appropriate times would be of critical importance. The capability to proceed from Step 1 to Step 2 would depend heavily on the timely gathering and evaluation of information on systems damage and the remaining resources. And the ability to maintain the economy with Step 2 measures (general guidance) until the management, organization, and associated systems for Step 3 (positive control) could be implemented would be a critical factor for long-term recovery.

Implications of Early Industrial Recovery

Mastering the early recovery problems after a heavy nuclear attack will be of the utmost importance. Adequate production must be restored before available essential stockpiles are exhausted. More generally, the goal of early economic/industrial recovery would be to establish quickly a small, balanced economy that is capable of supporting minimum short-term national objectives. Recovery policies that might be appropriate to this period would include shortterm domestic recovery, economic recovery based on outside assistance, and economic recovery with support of military and foreign aid activities. While any actual policy might contain elements of all three of these policies, it appears that short-term domestic recovery would be central to any early postattack recovery effort.

An important consideration in early recovery would be the concept of "rationalization of production and use" used in World War II Germany. This concept recognizes the need to adjust both production and demand to meet minimum national goals within

the limits of what could reasonably be produced. For nuclear war, this concept can be amplified to "rationalized recovery, production, and use," which emphasizes that a balance must be struck among what is needed for current production, what should be invested for future production, and what are considered as feasible national goals in any given time frame. Following a heavy attack, the adoption of expedient measures for recovery, production, and use is likely to be a major factor in achieving those goals.

When applied to a given industry, this reasoning can provide a strategy for preparation and performance. In this context, an industrial strategy is defined as a coordinated series of measures taken before, during, and after an attack to produce and use a given product to meet early postattack national objectives. The strategy would vary with the production sector in question. Table 2 summarizes key measures for two disparate industries: petroleum refining and metal fabrication. The petroleum refining strategy is based on the assumption that the country can function primarily on diesel fuel during the early recovery period; the strategy for metal fabrication assumes the use of reduced and simplified products.

Consideration of industrial strategies is one way of getting a grasp of what the continuity-of-government requirements for economic/industrial recovery are likely to be. Such concepts as "expedient production," "utilization of labor," "salvage and cannibalization," and "expedient repair and construction" can take on very specific meanings when applied to specific industrial processes. Even a cursory review of the current state of knowledge and emergency preparation is sufficient to convince one that the United States cannot currently implement the necessary policies or measures. Nor are the current direction and scale of efforts likely to provide the capability for meeting these needs. Meanwhile, our understanding of the implied requirements for continuity of government remains less than adequate.

Based on what we do know, however, some general observations can be made regarding continuity of government for supporting industrial recovery:

- Following a heavy attack on industry, the Federal Government may have to "manage" the economy much sooner than is currently believed possible. At the very least, the Federal Government must be able to manage the production and consumption of essential products early in the postattack period.
- To meet these requirements, the capability of government at all levels would have to be enhanced significantly, together with a significantly greater preparedness in essential industrial sectors.

Table 2

KEY MEASURES IN INDUSTRIAL STRATEGIES

Industry	Peacetime	Crisis	Transattack	Early Postattack
Petroleum refining	Large inventories Replacement components User equipment design Personnel shelter	Innovative storage Dispersal of mobile equipment Worker dispersal	Protection of workers Protection of inventories	Assembly of prefab components Rationalized use Engine Salvage
Metal fabrication	Dispersed construction Structure hardening Personnel shelter Product standardization	Expedient hardening Fire protection Worker dispersal	Control of plant fires Protection of workers	Expedient repair Product substitution Expedient production

- o The burden of managing the early postattack production and recovery would be considerably eased by the existence of in-place plans and capabilities for implementing industrial strategies. In fact, following heavy sector-specific attacks, it may not be feasible to meet minimum production needs without the types of preparations envisioned in industrial strategies.
- o Following heavy industrial attacks, government might not be able to adopt the approach of just allowing essential production to proceed at a maximum rate. Depending upon the economic strategy and the levels of damage, even essential production might have to be constrained at early postattack times.
- o Some of the countermeasures that are part of industrial strategies would require government control and acquisition of private property on a scale not heretofore envisioned. Considerable government efforts would be required during the planning and implementation phases to assure that the process is as equitable as possible and that the long-term consequences to recovery are acceptable.

Suggested Improvements

The overall needs include:

- o A program of significant size over a considerable period
- o A well-structured approach to research and planning
- o A better understanding of recovery concepts and associated measures
- o An improved technological information base

A major problem in planning for passive preparedness and postattack recovery management has been the overreliance on a piecemeal approach, dealing with specific issues and measures without adequate policy guidance to provide a basis for designing a realistic plan, and without the funding necessary to develop a variety of planning alternatives. A review of past research efforts and plans supports the conclusion that a primary prerequisite for progress would be the establishment of a program of significant size over a considerable period. Coincident with the start of such a program, or as a first step, would be a coordinated interagency commitment to a serious effort and to general policy guidelines concerning levels of politically feasible preparedness measures and well-defined positions on loss equalization, degree of centralization of recovery management, and similar broad issues.

Given a decision to embark on such a program, a second step would be to develop a well-structured approach to research and planning, based on a realistic range of scenarios and an inventory of potential problems, remedies, and requirements (both informational and organizational), as well as issues for intergovernmental concordance. A list of the major issues for resolution or study and of the major uncertainties for special study--or, where appropriate, for interagency consultation--would be a useful result of this step.

Such a structured approach to research and planning might include the following:

- o Policy studies of recovery and continuity of government
- o Continuity-of-government systems requirements for supporting economic recovery
- o Analysis of specific postattack economic/industrial measures
- o Issue-oriented studies (e.g., legislation, organization, behavior, and consumption)
- o Related study areas (e.g., industrial strategies, tax revision, and reemployment)

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ACKNOWLEDGEMENTS

A significant part of this study has been based upon past and present study and the advice of a number of prominent individuals in the technical community. This study, as many others, has been influenced by the seminal work of Sidney Winter of RAND Corporation. The considerable body of prior work by Carl F. Miller and Walmer E. Strope, senior associates at the Center, was also particularly useful. For background on economic/industrial planning, the work originating in the Department of Treasury, Federal Reserve Board and the Federal Emergency Management Agency were indispensable. In particular, we would like to acknowledge the guidance and encouragement of George Divine, staff economist at the Federal Emergency Management Agency.

I. INTRODUCTION

1. Background

Continuity of government is recognized as an essential requirement for U.S. survival under all conditions,[1] including survival and recovery from nuclear attack. For present purposes, "continuity of government" can be characterized as the capability of all levels of government, acting in concert, to take appropriate and timely action to support national objectives in a nuclear attack. "Continuity" suggests linking of all levels of government to permit a continuous flow of appropriate decisions and actions over time.

Economic/industrial considerations form only part of the requirements for government action prior to, during, and after a nuclear attack. During the crisis and transattack and early postattack periods, the needs for saving lives, maintaining law and order, and other such emergency actions are likely to be the principal determinants of government activity. Nonetheless, the unique requirements for economic/industrial recovery cannot be ignored if undue economic losses in the recovery period are to be avoided.

The requirements posed by economic/industrial considerations would derive from the overall economic policy that is adopted. Such a policy would be composed of a coherent set of measures designed to allow efficient use of remaining resources for the nation's survival and recovery. Current planning[1] contains measures for managing resources (e.g., allocations, priorities, and consumer rationing) and measures for stabilizing the economy (e.g., wage and price controls, credit controls, and financial regulation).

Although such measures are applicable to a wide range of emergencies, their detailed characteristics have been heavily influenced by the single concept of postattack recovery, i.e., a process of long-term economic growth starting from a damaged but still adequate economic/industrial base. With the growth of nuclear arsenals and a better understanding of the targeting possibilities, however, it is recognized increasingly that the residual economic/industrial base might be much smaller. As a result, the problems of the early postattack start-up of the economic/industrial system might require changes in the economic policy and the character and timing of emergency measures, with consequent changes in the requirements for continuity of government.

2. Scope

The overall objective of this study is to identify: (a) alternative economic policies relevant to the continuity-of-government strategies and (b) procedures for the reconstitution and recovery of the postwar U.S. economy. Specific objectives are to:

1. Apply prior studies by CPR and other groups and compile a catalog of economic policies relevant to transattack and postattack domestic and international affairs.
2. Determine the legacy value of the applications of such policies (subject to coordination with the government) in a time frame that includes preattack and initial recovery phases.
3. Determine the sensitivity of the total recovery to the application of each such policy.
4. Rank the most important beneficial policies for further study as to implementation and other factors.
5. Include: (a) a discussion of the state of the art in the subject area under research; (b) identification of the deficiencies in the state of the art; (c) suggestions for improvements; and (d) a selected, annotated bibliography.

II. CURRENT STATUS OF ECONOMIC POLICY AND MEASURES

1. Official Guidance

Official guidance[1,2] embodies a number of elements of continuity of government, which can be summarized as:[1]

- o Emergency succession to key positions in government
- o Preservation of essential records and documents
- o Maintenance of temporary alternate seats of government
- o Management of emergency operations
- o Management of postattack recovery

With respect to economic issues, two major obligations of government are recognized: resource management and economic stabilization. As used here, "resource management" means the identification and control of all resources needed for specified national objectives; "economic stabilization" refers to the process of maintaining the nation's financial system to allow an efficient use of surviving resources.

The basic functions associated with resource management are specified as:[1]

- o Evaluation of requirements and supplies of each essential resource
- o Determination of the nation's ability to meet its needs
- o Channeling of essential materials to essential uses
- o Establishment and administration of requirement policies

The specific tools of resource management in a national emergency would include: priority and allocation systems, production directives, conservation measures, consumer rationing, inventory control, antihoarding regulations, construction regulations, import-/export controls, and requisition orders. Other resource management measures include: special function arrangements, training of workers, and morale and public information activities.[1]

The principal objective of economic stabilization is to establish and maintain the economic base for coordinated national emergency actions. The basic functions are to:[1]

- o Restrain and combat inflation
- o Maintain confidence in public and private financial institutions
- o Continue the money economy (avoiding other means of exchange)
- o Assure conservation and equitable sharing of available goods and services

The measures available for carrying out the functions in various emergency environments include:[1]

- o Continuing essential banking operations
- o Providing for equitable sharing of losses
- o Controlling availability of bank deposits and currency
- o Providing new bank credit for essential activities
- o Government guarantees of private financing of essential activities
- o Controlled check clearing operations
- o Providing decentralized supplies of currency
- o Imposing limited and selective moratoria
- o Controlling foreign financial transactions

Part of continuity of government is the assignment and implementation of tasks at appropriate levels of government. In the first few months after a large nuclear attack, it is expected that national authorities would lack the information, staff, and experience to accomplish central management of the economy.[3] Government planning provides for a set of prepositioned regulations that become effective on attack and that: (a) delegate Federal authority; (b) freeze prices, wages, and rents, and institute rationing and priority systems; and (c) freeze interest, bank accounts, and other financial activities.

Federal authorities have made lists of survival items (e.g., medicine, food, shelter, and fuel) that would be considered essential and that would have priority on available supplies for production.[3] Initially, in the absence of adequate government management, each essential producer would certify his own needs for supplies in order to receive priority. As government acquired the necessary capability to act, Federal and state agencies would adjudicate problems in the allocation of supplies among essential producers.[3] Local government would have an important role in conserving essential supplies.

Emergency production measures imply the assignment of top priority to essential emergency operations and high priority to the production of items on the essential survival lists. Initially the only constraints on such essential production would come from the availability of necessary materials, energy, manpower, and other resources. Competing claims on surviving supplies of such items would be adjudicated by state or local agencies or cooperating units under regional mutual assistance programs. The

self-certification system would thus be subject to state or local allocation procedures. Even before the Federal Government has assembled the status information and the decision making apparatus to provide anything more than general guidance, decisions regarding priorities will be made at the state and local levels. A need will quickly develop for monitoring and coordinating these local decisions in accordance with national needs, resource availabilities, and transportation capabilities.

The stopgap emergency proclamations and priorities will thus be gradually subordinated to wider or nationwide assessments. Provision for continuity of government must thus include procedures for broadening and ultimately centralizing many decisions regarding priorities, allocations of essential industrial supplies and human resources, and reintegration of national networks and other facets of the vital infrastructure that includes transportation, communications, electric power, petroleum fuels, and feedstocks and finance.

The emergency plans contemplate maximum production of items on the essential survival lists. In the longer run, this policy would lead to a race among many producers of essential items to obtain as much of their necessary supplies as possible, and could lead to relative oversupply of some high-priority items at the expense of others. Such competition for needed supplies would demand the imposition of some combination of controls, including the assignment of production limitations or quotas, the allocation of critical supplies, and procedures for adjusting priorities as relative supply-requirement imbalances change. Moreover, regional differences in selective balances would require coordinated solutions.

2. Feasibility of Planned Economic Measures

It has been questioned whether government can carry out these functions postattack, and if so, how it can be organized to do it. Past legislation relative to potential postattack government responsibilities included the Strategic and Critical Materials Stockpiling Act of 1946, the National Security Act of 1947, the Federal Civil Defense Act of 1950, and the Defense Production Act of 1950 and 1953; numerous Executive Orders implementing these Acts or delegating specific responsibilities were issued. Most of this legislation was designed to deal with emergencies similar to those encountered in World War II and in the Korean Conflict, and is no longer in force. It has served as legal precedent and as models for standby emergency legislation at the state and Federal levels. A review of all such legislation discloses a wide gap between

the legal philosophy implied and the requirements for recovery management envisaged in past studies of postattack problems. Moreover, a further gap appears to separate the management philosophy suggested by earlier studies from the needs that are likely under current perceptions of the level of potential devastation.

Perhaps the most extensive set of proposals was that suggested for the proposed Office of Defense Resources (ODR).[4] It was to function as a central coordinating agency supported by emergency powers, delegate agencies, elaborate information networks, central planning staffs, and wide-ranging field services. Even this concept, envisaging a tight interlocking of many new or expanded agencies and a continuing updating of a master plan for allocation, production controls, and capital investment, may not have gone far enough in assessing the possible Federal role. In particular, it may not have adequately reflected the difficulty of maintaining or developing an adequate basis for determining economic value under such general disruption. A major weakness to be overcome would be the lack of a proven methodology for comparative evaluation of industrial alternatives in the absence of a normally functioning infrastructure of free markets. Moreover, staggering organizational problems arise in maintaining some balance between centralized planning and local or decentralized implementation. Coordination will be required between an unwieldy bureacracy and an impatient emergent leadership responding in conflicting ways to perceived economic threats in different regions and in the country at large.

If inventories needed for survival are limited or are being rapidly depleted, and if industrial supplies are barely adequate to sustain the functioning economy, quick but accurate assessments of the most urgent needs and opportunities will be required, followed by firm decisions and determined follow-through. Under peacetime conditions, consumer preferences and purchasing power (income levels and distribution) determine the demand for consumer goods. Prevailing cost relationships and sound business expectations determine the supply. Price adjustments tend to equalize supply and demand. Such free market adjustments normally provide benchmark data against which price controls can be imposed. As the free market contracts in coverage, these indicators of cost and value relationships become attenuated. Price setting by government can then become capricious, and it must be supported by an expanding rationing system and an elaborate administrative system for adjudicating requests for price increases and related allocation adjustments.

Under such conditions, stockholder influence over corporate management, and corporate influence over plant managers, will also be greatly diminished. In the absence of a complete system of mandatory controls over production quotas, Federal, state, or local influence (even if remarkably coordinated) can be expected to elicit varying responses from decentralized management of individual plants or local complexes.

Fears of the possible adverse consequences of government interference in industrial decision making have led all students of postattack economics to stress the need to retain as much of the market system as possible and to support any price controls by appropriate government procurement, allocation, and rationing policies. All plans emphasize the need for economic stabilization, but say little about how to achieve it. The ambiguous record of economic stabilization efforts in past wartime emergencies does not inspire confidence in the ability of any agency to manage an adequate system of controls efficiently in the chaos of the postattack economy.

Against these general problems, the emergency measures covered by specific plans (e.g., Emergency Banking Regulations) may seem to overemphasize detail. For example, an early measure consisted of the Federal Reserve's stockpiling currency at secure sites. Continuation of the banking system is recognized as essential, but the asset status of individual banks will be uncertain. Preparedness measures provide for record duplication and safekeeping, but computers integral to bank accounting are concentrated in large urban areas likely to be severely damaged. The Federal Reserve banks each have designated agent or correspondent banks as alternate sites, but these may also fail to survive.

Stated national policy includes equitable sharing of war losses, but the means for accomplishing this policy are uncertain. The most sweeping proposal (based on Asset Valuation and Equalization Certificates, and called the AVEC plan) has never met with wide acceptance within the Federal government or among informed specialists. Generally, policy statements relative to loss equalization stress that overarching weight will be given to those actions that will contribute most to accelerating the recovery; questions of equity will be of less immediate concern. Clear policy statements appear to be needed for morale and for guidance in business decisions. Even if the equalization policy determination is to be relegated to the postrecovery period, guidance is still required in peacetime with respect to the kinds of documentation and authentication of losses that will be needed to support claims and to record offsetting windfall gains.

Bank credit for essential recovery activities may prove to be largely Federal credit, with the Federal Reserve System and the member banks serving as agents for bookkeeping. Except for small loans for necessities covered by blanket rules, the limits and the processing of business loans would be closely and individually governed by Federal authorizations. General rules are needed for treating acceptances, lines of credit for operating capital, and similar requirements for business credit. With government control of investment, the financing of activities regarded as essential for recovery may come directly from Federal grants or from the financial sector, supported by Federal loan guarantees. Other sources of funds not coming under the observation of the FRS or the Federal government (e.g., private wealth or current receipts from business operations) may require registration and channeling into the financial system. This will be particularly necessary if deposit withdrawals and check clearing limitations are imposed to prevent the use of funds for any activity not contributing sufficiently to recovery.

Establishing ownership and rights to current business income accounts, collecting debts, obtaining access to bank deposits, and other impediments to the clearing of debts and current payables will inhibit financial transactions even for those individuals and businesses (e.g., in undamaged areas) that have survived with minimal losses of physical assets. Selective moratoria on debts have been proposed to respond to these circumstances. The selection would probably have to be based on a detailed subcategorization of debt circumstances, with appropriate terms specified for periods, coverage, and repayment procedures and schedules in each case. The details have appeared too numerous and complex for anyone to consider in peacetime.

Foreign financial transactions are likely to come under strict control, to conserve foreign exchange and to keep such transactions from subverting or conflicting with foreign trade policies. The control of foreign trade to the extent permitted by any surviving trade treaties will be necessary to implement foreign aid policies, if any, and to finance essential imports. Again, objectives, strategies, and practical methods of implementing such policies are not known and have not attracted much attention in postattack research.

The National Plan[1] includes prominently among its objectives the preservation of the familiar and cherished institutional framework of the nation. This includes the preservation of legal and democratic process, individual rights, nondiscrimination, free markets, free enterprise, free movement, free elections, a representative form of

government at Federal, state, and local levels, and a judicial system capable of assuring civil and criminal justice. The emergency measures of the trans- and postattack periods may require severe limitations or abridgment of many of these freedoms, but the preservation of at least the skeleton of the institutional structure is a major objective of the plan and would be a constraining force on acceptable innovations.

Provision is also required for timely referenda on the acceptability of emergency-generated innovations, for relaxation of emergency powers, and for restoration with due haste of preattack rules of conduct, concepts of equity, and individual and property rights. These considerations underlie stated policy that adequate recompense be assured for industrial or corporate losses resulting from the requisition of private services or property, for equitable sharing of war losses, and for seeing that no individuals, classes, or other entities profit inequitably from the economic circumstances or from government actions.

A second, perhaps more threatening, danger is the possibility of bypassing the courts in the dynamics of postattack developments. Expert judicial review of decisions made and actions taken must be provided for, but in such a manner that officials or lay bodies not be overly inhibited from taking prompt but prudent actions in the public interest without fear of legal reprisal from affected groups. On the other hand, the excessive use of emergency powers must remain subject to ultimate judicial remedy. Legislative guidelines giving general rules for documentary support for the exercise of prudent judgment are needed, either as part of preattack preparedness or as an early postattack legislative agenda.

These considerations suggest that the general measures included in standby emergency plans (including the various state plans) are likely to prove adequate only for the immediate postattack period and must be supplemented as rapidly as possible by the creation of agencies with wider coordinating responsibilities. Ultimately the speed with which such agencies can be structured and made effective could depend on the condition of the Federal Government, the capacity and coverage of the communications network, and the restoration of the infrastructure needed to support centralized control. The necessary transitions are at least suggested in the current National Plan.

3. Further Consideration of the Scope of Continuity of Government

The general statements of the emergency responsibilities of government have manifold implications. For example, continuity of government includes expansion of

the functions of government, such as official sanction of innovative hybrid organizations that include agency officials and community or industrial leaders who have acquired semiofficial status. Legally these hybrids may be constituted primarily as advisory bodies, but with de facto decision making power exercised indirectly through some agency of Federal, state, or local government. For example, such bodies may be formally established as boards for special districts or as special commissions at the state or Federal level. Little work has been done regarding such possibilities; little or no attention has been devoted to their characters, even in discussions of standby legislation; and no delineation of possible functions for such hybrids has been specified. However, these could include coordination activities within a multicounty or interstate Standard Metropolitan Statistical Area (SMSA), or for other mutually cooperative regions that cross or combine extant political or administrative jurisdictions. Functions could also include coordination among industrial groups to bypass antitrust restrictions in manners sanctioned by appropriate postattack government agencies.

Continuity of government is thus concerned not only with the protection of sites of government, legal succession, definition and allocation of emergency powers, and preservation of the legislative and judicial authority for implementing emergency arrangements, it also includes continuity or succession of authority for decision making in the private and corporate domains (particularly in the management of vital networks), in the financial and other infrastructure service sectors, and in industrial organizations generally.

Although such lines of authority are outside the normal peacetime concept of government, corporations, partnerships, and even sole proprietorships either operate under articles of incorporation or have some other recognized status under applicable laws. Postattack uncertainties include problems of preserving and updating such legal definitions of private responsibilities and authorities as may be required for continued and expanded functions in the national interest.

Preservation of continuity of government thus includes the following additional tasks:

1. Determination of succession to positions of legal authority.
2. Adaptation of relevant legislation permitting postattack operation of public and private agencies.

3. Establishment of new boards, committees, and other new agencies of government or legal entities to respond to emergency requirements.

4. Modification of the tax structure and other financial arrangements to fund extant or expanded functions.

5. Revamping of the regulatory and institutional infrastructure of government and industry to better cope with the emergency environment.

6. Provision of a legal/judicial process for treating (or for deferring for post-recovery adjudication) disputes and claims resulting from emergency actions.

7. Provision for the termination of most of these special relationships and arrangements when they are no longer appropriate.

8. Preservation of law, civil and property rights, and a basis for legal due process throughout this institutional evolution and for ultimate return to something akin to the peacetime regime.

The official guidance and derivative statements form the basis for government planning. However, detailed planning and implementation depend heavily on a knowledge of the emergency environments and overall economic policies under which the functions are to be performed. For a major nuclear conflict, this process is hampered by a lack of consideration of the full range of postattack environments and alternative economic policies.

III. EXTENSION OF CONCEPTS

1. Overall Economic Policies

The overall economic policy followed by the United States in the postwar world would depend largely upon the nature of the postwar strategic environment and U.S. national objectives. One of the most important determinants of policy would be the level of damage sustained by the U.S. and the early impact of this damage on political, social, economic, and military systems. Another determinant would be the presence or absence of continued military conflict and the type and scale of this conflict. Even in the absence of military conflict, considerations of continuing nonmilitary competition with or without assistance to other nations would influence U.S. economic policy.

The alternative scenarios that could be generated to describe these considerations would be many and complex. Rather than develop a great variety of scenarios, an attempt has been made in this study to describe alternative overall economic policies for the U.S. that span the range of feasible postwar strategic conditions.

The alternative economic policies reflect major differences in the emphasis placed on factors competing for recovery-period resources and consumption. These policies are: (a) long-term domestic recovery, (b) short-term domestic recovery, (c) economic recovery based on outside assistance, and (d) economic recovery with support of military and foreign aid activities (see Table 1). Although any actual policy would probably contain elements of all the policies, the particular emphasis would be an important factor in determining the type and timing of economic/industrial activities and requirements for continuity of government.

Long-term domestic recovery is the policy that has been addressed in most prior planning and studies. One underlying assumption in this policy is that the initial phases of recovery or reconstitution* are manageable and that, after a short period, recovery and production efforts can be directed toward rebuilding the economy to prewar levels as quickly as possible. The policy also assumes that the rebuilding takes place essentially with remaining domestic resources, with little outside assistance and with few demands on the economy from the outside world.

*Reconstitution, as used here, refers to the early reestablishment of essential systems and processes based on resources available immediately after attack.

Table 1

POSTATTACK RECOVERY POLICIES

Policy	Objectives	Key Assumptions	Production Emphasis
Long-term recovery	Prewar GNP ASAP	Acceptable war end SMSA industry Min. trade and aid Standard processes	Capital buildup Low private consumption
Short-term recovery	Small, stable economy ASAP Balanced recovery base	Acceptable war end Min. SMSA industry Min. trade and aid Nonstandard processes	Subsistence production Capital expedients Rationalized production and use
Outside assistance	Recovery with trade and aid	Favorable war end Available foreign markets	All feasible products Subsistence consumption Max. capital imports
Military and foreign aid support	Protect and restore U.S. and allies Max. trade and aid	Indeterminate war end SMSA industry Military capability	Military production Subsistence consumption

For these assumptions to hold, the war must be terminated quickly on terms that are at least acceptable to the U.S. Although victory in the sense of total defeat of the enemy is not required, the U.S. must at least be free of further serious external threats for an indefinite period. These conditions would allow sustaining the population and rebuilding the domestic economy with minimal diversions for supporting U.S. military activities. In addition, it is assumed that no resources are diverted for foreign aid and that foreign trade is minimal.

Under these conditions, maximum investment could be made in the reconstruction of basic industry to produce increases in the industrial base as quickly as possible. To the extent possible, reconstruction would be by conventional means and would provide modern and efficient facilities capable of sustaining economic growth over the long term. This policy would require the restraint of private consumption in favor of essential investment for a period of several years.

For conventional reconstruction to dominate postwar economic policy, the surviving production resources would have to be sufficient to meet the population's subsistence requirements with enough excess for significant capital investment. The magnitude of subsistence requirements and the geographical concentration of U.S. industry suggest that a significant fraction of the industry in metropolitan areas would have to survive to make the policy feasible in the first 1 to 2 years after attack.

Many of the associated economic measures have been used in prior national emergencies, and these and other measures have been included in plans and plan guidance documents for nuclear conflict. What appears to be the most pressing need is an effort to increase the readiness for applying what is already known. Increased knowledge is also required to apply prior experience to changing strategic conditions and an evolving economic/industrial system. Among the required efforts would be an expanded survey and analysis of critical-industry production processes and networks, completion of financial and other economic plans, and enlargement and training of personnel to staff an emergency system (e.g., executive reserve).

Short-term domestic recovery refers to a period of 1 to 2 years after attack during which the objectives would be: (a) to achieve a small economy capable of meeting minimum domestic needs for an indefinite period and (b) to develop a small, balanced industrial base using domestic resources to support the long-term recovery. The policy might feature a more or less uniform recovery effort over the entire U.S., or it might give priority to selected regions that appear most capable of meeting national needs quickly.

One view of the postattack environment suggests that heavy damage to the U.S. might result in the relative isolation of economic regions, causing an independent development of each region for an extended period, with little coordination from the national level. Although this might happen, especially in the absence of adequate preparations, it would be disadvantageous, owing to inefficient use of the remaining production and essential inventories. Most evidence suggests that the regions and the nation as a whole would recover more rapidly and efficiently with coordination by the Federal Government at the earliest possible time.

A nationally coordinated effort—with selective regional recovery—would thus appear to be an economic policy worth consideration. The variation in the industrial damage over the U.S. might be such that essential production could more easily begin in some regions than others. Under such a policy, a large fraction of the remaining resources would be channeled to principal producing regions. Production for private consumption would then be redistributed across the nation. This policy might include the salvage and cannibalization of industry in low-production regions (e.g., transformers, product pipelines, and manufacturers' inventories) to augment resources in high-production regions. The policy would also include the movement of labor to high-priority regions as required to maximize essential production.

The assumed basic strategic conditions include rapid termination of the conflict on acceptable terms, minimum outside demands for economic aid, and insignificant military demands. The policy of short-term recovery is applicable to conditions of very heavy damage and is minimally dependent on metropolitan industry. This policy, as distinguished from the long-term recovery policy, makes use of expedient processes for rapidly increasing production to meet the population's subsistence requirements, for replacing capital consumed, and for developing a small, balanced industrial base for eventual full recovery.

The policy assumes that early consumption requirements and the drastically reduced industrial base would force the use of expedients in the production of goods and services, with consequent inefficiencies by prewar standards. Plants might be built or restored to produce goods less efficiently but more rapidly, nonessential byproducts might be wasted, labor productivity might be reduced, etc. The policy would allow the phasing out of these inefficient plants after a few years, as the larger and more efficient plants needed for long-term recovery came on line. This less efficient use of resources associated with short-term production would probably delay long-term recovery. With heavy national damage, the capacity to achieve short-term production

objectives would probably depend on the degree of industrial preparedness planning and implementation undertaken prior to the attack. Coordinated sequences of countermeasures spanning the crisis, transattack, and postattack periods would be required for rapid resumption of essential production. Such sequences, taken together with the rationalized use of production, can be considered to be sector-specific industrial strategies. A further development of this concept is given in Chapter V.

A policy of economic recovery based on outside assistance is another option that might be feasible under some strategic conditions. Under this policy, both short-term and longer-term recovery would depend significantly on receiving producer durables and some essential consumption items (e.g., fuels) from foreign nations. A prerequisite for implementing this policy would be a favorable end (for the U.S.) to the conflict: conditions must have been established under which enemies are not able to coerce the U.S. or its trading partners. The U.S. would have to maintain control over the means of commerce (sea lanes, cargo carriers, ports, etc.).

The policy depends to some degree upon the capability of the U.S. to export products in exchange for needed imports. U.S. production would therefore have to exceed that required for essential domestic consumption. Any goods or services (either essential or nonessential) that would be marketable could be produced. Notable types of commodities that would likely be in worldwide demand and that would be feasible to produce would be agricultural products and raw materials such as coal, crude oil, and ores. For trade purposes, the U.S. might also be able to make use of salvaged equipment and material, gold reserves, overseas assets, and surplus military supplies and equipment (assuming favorable peace terms).

The success of the policy would depend on the degree of public support. In the short term, the population might have to be maintained at minimum subsistence levels while remaining consumer products were exported in exchange for needed imports of capital goods and other essentials. There would be less need for nonconventional means of production, but greater emphasis might be placed on salvage of consumer products, restoration of transportation and transportation modes, international political and financial relationships, etc. Long-term conventional recovery could begin sooner, based upon imported producer durables. A favorable end to the conflict might increase the incentive in undamaged countries to reestablish trade and to assist the U.S. and other damaged nations to restore their economies.

A policy of economic recovery with support of military and foreign aid activities might be necessary if the war continued in some form, or if the outcome were

indeterminate. Under these conditions, a threat to the U.S. and its allies would persist. The U.S. might seek to protect both itself and its allies and to restore industrial support for these activities as soon as possible. Continued measures for industrial preparedness of the surviving industry and labor force would be required.

Military production in surviving facilities would be increased, and other basic industrial facilities would be converted to military production. Private consumption might have to remain close to subsistence levels for an indefinite period. However, the continuing external threat might provide the necessary motivation for the labor force. The process of rationalization of production and use of military products would have to be undertaken so that military plans and activities were reasonable in light of what could be produced by a damaged economy.

The available evidence tends to indicate that the support of any significant level of military effort would require the survival of a significant portion of SMSA industry. Expedient construction and production approaches associated with short-term recovery might be able to supply only minimal military needs, possibly emphasizing low-technology items. Extensive preattack preparedness measures, such as hasty hardening of industrial facilities,[5] offer the early possibility of expanded production of selected military items; however, there are still many questions about the provisions of more broadly based military production support.

This policy would place difficult added demands upon the economic/industrial system. The production of military goods and other surpluses above minimal needs for domestic survival and recovery requires a higher level of industrial survival than for the other economic recovery policies. The process of rationalization of production and use would appear to be a necessary part of this policy in order to permit feasible solutions to supply vs. demand dilemmas. Possible military strategies might have to be modified in the light of limited levels of postattack production. This problem suggests the need for staffs including both military and nonmilitary planners working closely together during peacetime to develop alternative feasible production/military strategy combinations.

Extensive use of this policy would probably delay the recovery to prewar levels for several years. The policy would require the increase of production capacity in many basic industries; however, the neglect of other nonessential industries would ultimately reduce the rate of economic growth, delaying the restoration of prewar levels of production and private consumption.

Peacetime preparations to implement a policy of postattack military production would improve preparedness for industrial defense mobilization in general. Detailed planning for requirements and production alternatives would have much in common with the needs for study of defense production prior to attack. Plans could also be developed that recognize the requirements for both mobilization and industrial preparedness for nuclear attack. The staffs involved in this effort would gain valuable experience transferable to the prewar mobilization problems. Trade-offs between industrial mobilization and industrial preparedness could be examined to the benefit of both areas of planning.

The most stringent conditions under which this policy might be employed would be those of continuing conflict including strategic attacks against the U.S. industrial base. Some observers have conjectured that an additional series of strategic attacks after recovery efforts had begun could cause production to make a final plunge below minimum acceptable levels for national survival.

Although this problem has not yet been explored in any detail, it would appear that the more intensive the threat, the more extensive must be the industrial preparations to meet it. One possible approach, which is the one adopted by the Soviet Union, is to depend more heavily on large, well-distributed inventories of essential commodities and military equipment for use during an extended period of hostilities. Other possible actions might include expedients similar to those indicated in the short-term recovery option, such as survey and protection of damaged areas, selective cannibalization and salvage, and expedient production in alternative sites.

There is, of course, a limit to what industrial preparedness or civil defense can be expected to do. If, after the first major exchange, one side in a conflict retains large strategic forces, intact Command, Control, and Communications, and excellent target intelligence, then that side has most of the ingredients for victory. This is not a problem solely for civil defense—it is a problem for the entire defense establishment. For this set of conditions, the damage-limiting roles of strategic offense and active defense must also be developed and coordinated with a much more extensive civil defense program, including extensive industrial preparedness.

2. Legacy Values of Recovery Policies

The legacy value of current postattack plans and recovery policies relates primarily to the extent to which they are applicable to any general mobilization or significant rearmament. Many of the proposed postattack controls and economic

stabilization policies have their roots in past wartime emergencies. These include the Defense Materials System (DMS), price and wage controls, rationing, production set-asides, production limitation orders, allocations, the priority systems, certificates of necessity, government contracts for construction and operation of plants in war-supporting industries (e.g., aluminum plants), the stockpiling program, and the system of delegate and claimancy agencies formalized in the coordinating responsibilities of the Federal Emergency Management Agency (FEMA) or in predecessor agencies. These provide the core package of options for possible use in any major mobilization for general war. They are also central, in greatly expanded or extended form, to postattack plans.

Postattack planning and plans for natural disaster assistance have at various times been developed in parallel efforts and have shared or interchanged funding. This linkage has perhaps provided some spin-offs from each program that were of value to the other, but has obscured the identification of specific contributions. The perceived needs for each type of preparedness have provided the justification for Federal aid to the states in developing emergency plans generally, and for sustaining the regional offices now integrated under FEMA for implementing disaster assistance. A major contribution of postattack planning to disaster assistance is the added impetus given to the development of cadres for exhibiting Federal presence and for establishing precedents for state/Federal cooperation and coordination.

These agencies have provided a significant part of the initial capability to respond to a range of other peacetime emergencies, such as embargoes, crippling strikes, threats of sabotage, hostage situations, riots, hijacking attempts, and hazardous materials accidents. Based on this initial capability, cooperative emergency efforts have been undertaken among agencies of Federal, state, and local governments whose functions are generally based upon peacetime responsibilities (e.g., FAA, National Guard, FBI, state and local police, and fire departments). Owing to the perception that such emergencies are likely to increase in scale and prevalence, it is likely that the planning experience and capability in agencies concerned with nuclear attack preparedness will be increasingly relevant to these other forms of emergencies.

Adoption of any of the four economic policies for postattack recovery would enhance these contributions to other forms of emergency planning. By the nature of policies, each would make a distinctive contribution.

The long-term recovery option would be an extension and enhancement of the current planning and industrial preparedness approach. The required well-trained, adequately sized staffs and updated plans would assist Federal, state, and local agencies in responding more effectively to other types of emergencies (embargoes, terrorism, natural disasters, etc.). Planning efforts with specific facilities and industries should also result in better safety and preparedness of industry for a range of disaster situations. Properly safeguarded knowledge from industrial planning efforts would provide invaluable information for a range of research and planning efforts related to conventional economic growth.

Legacy values that follow from short-term recovery are different than those from long-term recovery. Many of the expedient measures would be inappropriate for other types of peacetime disasters, although some detailed procedures might be useful for rapidly regaining emergency operating capability of essential support systems (transportation, distribution, etc.). The experience gained from the planning of rationalization of production and use would apply to situations where sudden and permanent shocks are delivered to the economic/industrial system. Such situations might include permanent loss of overseas sources of petroleum, permanent shutdown of all nuclear facilities, and permanent bans on major agricultural chemicals. Also, the nation's ability to maintain a stable economy under such conditions would be enhanced by any increased inventories, standby production capabilities, and other preparedness measures that would be required to implement the policy in wartime.

Implementation of the outside assistance option would provide an organization with expertise in both U.S. and foreign economic/industrial considerations. This expertise and the associated information base would be useful in understanding and preparing for a range of conventional and emergency conditions. The organization would be able to contribute information to considerations of international trade, technology transfer, process technology, labor and skills, and other related topics. It would be able to contribute to the understanding and amelioration of international economic upheavals, such as sudden major reductions in the supply of crude petroleum, other raw materials, unique manufactured products, etc. Contributions could be made to areas such as the understanding of long-term industrial preparedness payoffs of specific peacetime foreign aid proposals, the assessment and amelioration of disaster or disruption to allies and other nations, and proposals of international bodies for disaster aid commitments.

The preparedness planning associated with a policy of military and foreign aid support would provide an extensive new government capability. In addition to providing

most of the legacy values associated with short-term and long-term recovery, this option would provide a basis for assisting in the solution of a range of military and nonmilitary problems. The large inventories associated with this policy would provide a source of supply of military items to meet the sudden demands of local or regional wars without reducing stockpiles in other theaters. The nonmilitary stockpiles of commodities for private consumption would be a source for supplying needs resulting from disasters or other major disruptions at home and abroad. Much of the planning and preparedness efforts would be directly related to the defense mobilization effort and would therefore enhance mobilization preparedness.

IV. DYNAMIC ASPECTS OF ECONOMIC/INDUSTRIAL MEASURES

1. Current Approaches

Continuity of government requires, in addition to the integrity of the government organization and its authority, uninterrupted operations. To be effective, resource management and economic stabilization measures must be introduced early enough to affect the activities to be controlled, and they must be superseded by other measures at appropriate times to allow continued recovery of the economy.

Economic/industrial measures are embedded in a wider range of transattack and postattack recovery measures. Descriptions of the dynamics of these processes have been developed ever since the early 1950s. Although there is more or less general agreement that the requirements for action will change, starting with the attack, there is no agreement on the timing of these changes. Most observers would distinguish three or more sequential operational phases featuring different objectives and requirements for actions. These would include: (a) a transattack phase concerned primarily with survival of the population and essential assets; (b) an early recovery phase concerned with the reconstitution of the remaining organization, population, and other resources to permit continued functioning of the nation; and (c) a long-term recovery phase concerned with the restoration of the economy and other parts of the national entity to prewar standards. Most recent considerations of the strategic environment and of preparedness have led to the inclusion of a crisis phase prior to the attack phase.

Figure 1 illustrates one approach to describing the types of measures that would be important over the various operational phases.[6] In the figure, economic/industrial measures do not appear until well into the postattack period. However, they are intrinsic to all phases, in actions such as the protection and conservation of resources and the recording of the use or exchange of assets.

The maintenance of government control and authority is clearly a prerequisite to any meaningful actions in all operational phases. Measures directed toward the preservation of life dominate considerations during the transattack period and into the postattack period. Measures related to economic/industrial recovery become the focus of attention after damaging effects have been controlled and fallout hazard levels have diminished sufficiently to permit scheduled operations.

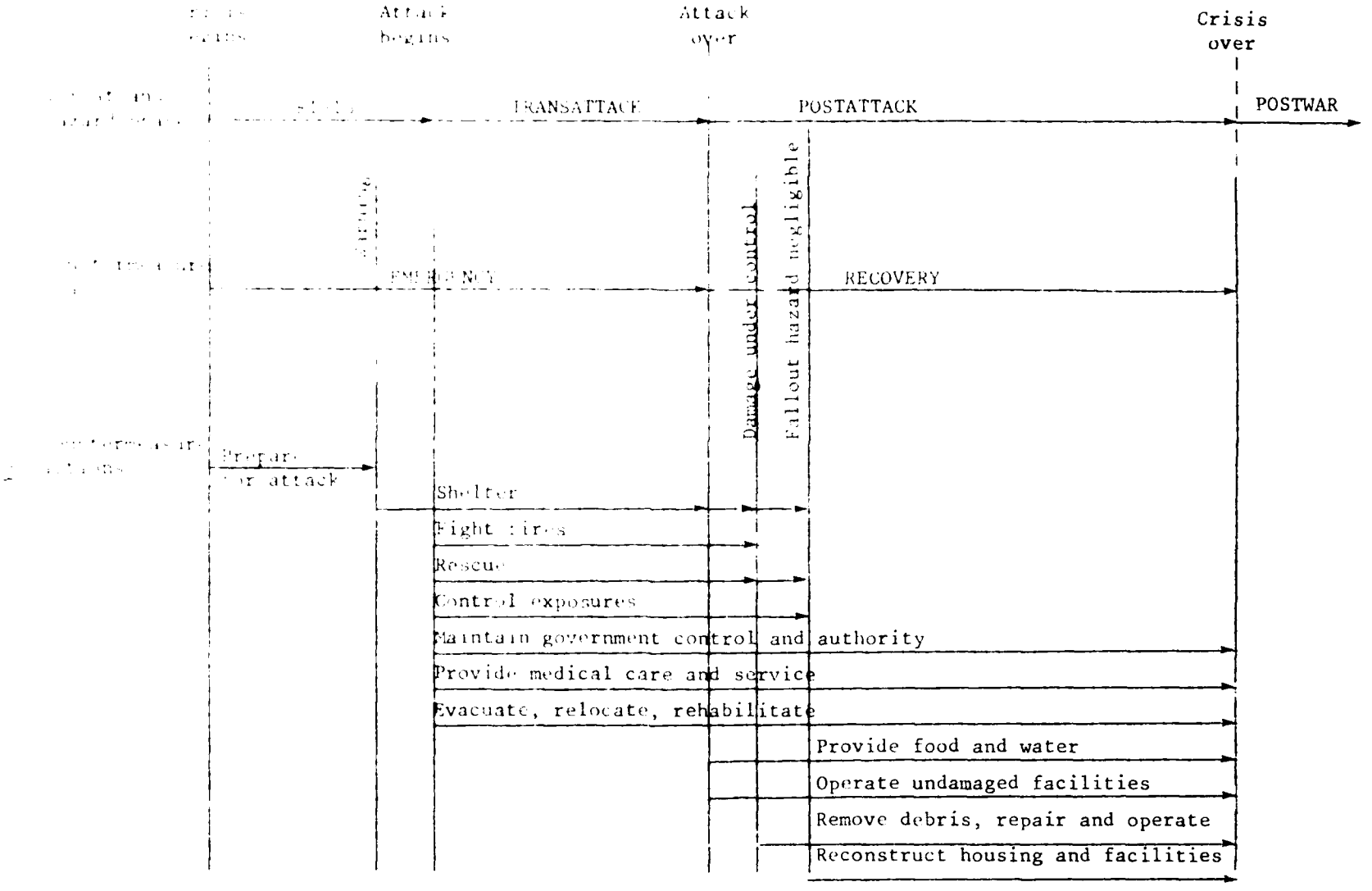

Figure 1. SEQUENTIAL HAZARD AND COUNTERMEASURE PHASES AND CIVIL DEFENSE ACTIONS FOR NUCLEAR WAR AND POSTATTACK SCENARIO

Source: Reference 16

A further differentiation was made of the timing or sequence of economic/industrial actions taken in the early recovery phase. One source[6] presented a sequence of four steps, or plateaus, for orderly economic/industrial recovery (primarily through resource management). These steps were:

- o Securing the surviving essential resources
- o Restoring support systems
- o Short-term repair and cleanup
- o Initiating the economic/industrial system

The logic of this sequence is fairly evident, although the focus is rather narrow. Securing essential resources is necessary to prevent further losses and to provide the information for action. Restoring essential systems (e.g., electric power and transportation) and short-term cleanup are needed to permit the servicing of facilities that are to be placed into production. Extensions of this breakdown are required to cover the entire range of economic/industrial activities. For instance, the identification and securing of all important economic assets must be undertaken as soon as possible after securing the "essential resources" for the early postattack phase. Also, owing to the regional disparities that are likely to exist, the four steps should be interpreted as applying on a local or regional basis. Thus, some areas will be ahead of others in reaching the various plateaus.

The systematic stepwise descriptions have apparently not been attempted for economic stabilization measures. The National Plan[1] does not include much information on the type and timing of economic measures. The most specific information given is related to the control of private consumer transactions.

The Plan indicates that, for a period of not less than 5 days after an attack, sales of essential consumer items would be prohibited except for perishables and prescription health items. During this period, local authories would be required to:

- o Initiate inventory control
- o Assess supply and resupply
- o Register local consumers
- o Estimate demands for essential products
- o Distribute ration evidence

An important action at the Federal level during this period would be a public declaration by the President, stressing national objectives, asserting the continued authority of government, and explaining the roles of local, state, and Federal Government.[1] Parallel statements would be made by the heads of state and local governments.

Other measures are generally not presented in a time-phased sequence, but are implemented on an "as soon as possible" basis. Important measures that are mentioned include: control of banking operations (i.e., Emergency Banking Regulation #1);[7] initiation of direct economic controls (e.g., freezing of prices, rents, wages, and salaries); administration of controls; and control of "primary" inventories.

Other sources are more specific about functions and measures to be taken during the "emergency period." A Federal Reserve System Committee[8] indicated five major functions:

- o Emergency maintenance of essential banking functions
- o Emergency plans for handling destroyed or inaccessible banks
- o Emergency control of monetary and banking liquidity
- o Emergency credit for essential purposes
- o Emergency treatment of civil liabilities and property rights

The "self-certification system" mentioned previously[3] is to be used "following the shelter phase." The self-certification system would allow the producer of an essential item to gain a legal prior claim to supplies by presenting a certificate to the supplier. This system is to operate only until government officials can determine the supply-requirements balance for significant commodities and issue certificates for use by the producers.

Using the self-certification system, industry is pictured as continuing production until imbalances in the surviving inventories begin to hamper production. At this point, prepositioned regulations would become inadequate, and public officials would have to intervene and begin to administer the control program. The control system would provide for an extension of priorities from essential items to their prerequisites. This further extension was judged not to be possible before an analysis of requirements that would probably take more than 90 days.[9]

Investment activity is pictured as being restricted to projects with an early and obvious payoff. Little or no construction or effort in industry is foreseen in the first 90 days. Investment is seen as supporting the immediate welfare of the population, such as by construction of reception centers.

2. Extension of Concepts

The foregoing discussion was addressed primarily to the resource management aspects of the staging process. A complete description of economic aspects should be generalized to include the process of economic stabilization. A suggested description is as follows:

Step 1: **Preserving Residual System Status**

The first requirement for economic and other processes is the maintenance or reestablishment of local, state, and Federal authority. This will be a prerequisite for maintaining essential continuity with preattack economic and other systems. Government must also be in a position to give key organizations and the community at large authoritative guidance as to: duly constituted leadership; local, regional, and national viability; specific in-place economic stabilization and other measures currently applicable; etc. Early action will also be required to identify surviving resources, including monetary and nonmonetary exchange certificates and related systems. Measures must also be taken at this time to preserve and protect those resources, which will be needed for early and late recovery of the economic system. Included would be monetary and nonmonetary resources and systems, and essential records and facilities.

Step 2: **General Guidance of the Economy**

This step would include the reestablishment of general economic controls over economic/industrial systems. Efforts would be undertaken to assess capabilities and needs. In addition to essential products, this would include resources such as the financial system. This stage would also include the establishment of general priorities for economic activities, with implementation left to individual economic units. Based on the general needs and priorities, revised guidance would be provided for allocation and use of essential resources. This would include specification of the type and conditions for essential banking operations. Also included would be general guidance establishing private-sector legal authority for action and providing general guarantees for those engaged in essential production or services.

Step 3: **Positive Control of Economic/Industrial Processes**

This step would begin when sufficient information on resources and needs had been assembled and when sufficient management capability was available to make detailed control feasible. Measures used during this period would involve more specific decisions by government, including requisitioning of private property, issuance of production orders for essential goods and services, and issuance of limitation orders to control the use of essential materials in short supply. This step would also include greater interregional transactions to support national plans for generalized or regional recovery. With the return of a more orderly (but heavily controlled) economy, financial processes would be included that allowed greater availability of credit for essential purposes and generally greater access to private deposits in the banking system.

Step 4: **Relaxation of Controls**

After economic stabilization had been achieved and the country and the capital base had been sufficiently restored to assure long-term recovery, controls would be gradually relaxed to encourage the return of peacetime economic incentives. An important issue to be addressed in this step would be the resolution of problems of legal ownership. In the financial area, this would include establishment of the ownership of deposited funds and other financial assets. Equally important would be the issue of resolution of legal obligations. The possible imbalance in remaining assets and obligations would slow recovery, calling for consideration of issues of loss equalization. Other indirect measures, such as tax and fiscal policies, would be large factors in restoring and guiding the economy back to prewar levels.

Table 2 lists 45 potentially applicable measures for economic stabilization and resource management. The measures listed are identified by an applicable operational phase. Since the measures are generic in form, they could represent a myriad of specific actions, many of which are similar to those previously carried out in wartime by special boards and agencies (e.g., the Office of Price Administration). Others would be quite different, owing to the extent of damage and the economic policy adopted.

3. Challenges to Continuity of Government

Under all scenarios, except possibly for a very light or intermittent nuclear exchange, the trend in effective economic control will be that it will first move to decentralization; then, following reconstitution of effective Federal operations, it will move into a period of increasing centralization of major decisions, culminating in a peak of Federal management; finally, it will move gradually through a period of restoration of normally decentralized control of state and local authority and of private economic management.

Step 1 would likely be to find the Federal Government viable but greatly dependent on state and local or even emergent leadership for on-the-spot damage assessment, decision making, and direction of emergency actions. A first step for Federal authority would be to make appropriate pronouncements that put standby emergency legislation in force, supplementing any similar actions taken by state governors. A second step would be to protect local authority from later legal or judicial challenge for prudent exercise of emergency powers in the public interest. Temporary delegation of such powers, blanket accrediting of responsible lines of succession for state or local authority, general guidance regarding modifications of due process, and practical standards for documentation of authorization granted or actions

Table 2

POTENTIAL GOVERNMENT ACTIONS AND ASSOCIATED INFORMATION AND PLANNING NEEDS

Potentially Applicable Action	Phase or Step*	Prerequisite
1. Implementing CR financial system	CR	Plans, organization and exercises, warning
2. Protecting resources	CR, TA	Plans and materials, warning
3. Redistributing essentials	CR, 2, 3	Plans, surveys, decisions
4. Temporary bank closings	CR, TA, 1	Warning and guidance
5. Stockpiling currency and records	PT	Maintenance and plan updates
6. Limiting deposit withdrawals	CR, TA, 1, 2	Plans and authority
7. Reorganizing distribution	CR, 1, 2	Guidance and plans
8. Freezing prices	CR, 1	Guidance and in-place orders
9. Rationing	CR, 1, 2, 3	Guidance and in-place orders
10. Finding and securing essential resources	1	Guidance, organization, and data base
11. Certifying essential industry	CR, 1, 2	Guidance, surveys, data base
12. Organizing and transporting essential workers	CR, 1, 2	Plans and status data
13. Providing hazard pay	CR, 1	Policy, plans, organization
14. Maintaining communications	CR, TA, 1	Plans, organization, and status data
15. Restoring vital communications	TA, 1, 2	Plans, organization, and status data
16. Maintaining utilities	CR, 1	Plans, organization, and status data
17. Restoring utilities	1, 2, 3	Plans, organization, and status data

Table 2 (cont.)

Potentially Applicable Action	Phase or Step*	Prerequisite
18. Resuming priority transportation	1, 2	Plans, organization, and status data
19. Allocating and controlling materials	2, 3	Complete "ODR" planning and status
20. Implementing production limitation orders	2, 3	Status data and complete "ODR" planning
21. Implementing production directives	2, 3	Status data and complete "ODR" planning
22. Training workers	PT, CR, 2, 3	Status data and complete "ODR" planning
23. Providing selective debt moratoria	CR, TA, 1	Policy, plans, and status
24. Guaranteeing loans	2	Policy, plans, and status
25. Providing legal guarantees	CR, 1, 2	Policy, plans, and status
26. Implementing foreign trade controls	2, 3	Policy, plans, and organization
27. Controlling investments	2, 3	Status, needs, and methodology
28. Implementing subsidies/tax	2, 3, 4	Status, needs, policies, plans
29. Providing for loss equalization	3, 4	Policy, plans, status
30. Accrediting management	3, 4	Policy, plans, status
31. ODR-type scheduling	2	Status, surveys, methodology, organization
32. Providing emergency authority to S&L officials	1, 2	Guidance and legal authority
33. Evacuating heavily damaged areas	1	Status and authority
34. Scheduling restoration by area	2, 3	Status and methodology
35. Scheduling restoration by sector	2, 3	Status, priorities, methodology

Table 2 (cont.)

Potentially Applicable Action	Phase or Step*	Prerequisite
36. Responding to regional needs	2, 3	Status, priorities, organization
37. Controlling interstate trade	2, 3	Authority, organization
38. Issuing certificates of necessity	2, 3	Priorities, organization, date, and methodology
39. Implementing priority systems	2, 3	Priorities and methodology
40. Aiding foreign trade	2, 3	Status, policy
41. Siting of plants	3, 4	Needs, alternatives, policy, and plans
42. Constructing expedient plants	2	Priorities, status, plans, materials
43. Providing differential pay allowances	2, 3	Price/wage data, policy, plans
44. Relaxing controls	4	Policy and methodology
45. Resolving problems	3, 4	Policy, authority, organization

*4 phases of postattack recovery:

1. Survival—decentralized control
2. Emergency Federal control
3. Peak Federal control
4. Relaxing Federal control—return to normalcy

CR = Crisis Relocation
TA = Transattack
PT = Peacetime, prior to attack

taken would be matters for immediate consideration. This would involve a quick reappraisal of standby legislation in the light of postattack conditions and the redefinition, as appropriate, of emergency powers, responsibilities, acceptable procedures, and other necessary modifications of peacetime processes. Standby legislation generally reflects a cautious reluctance to legalize sweeping expansion of emergency powers or to delineate acceptable procedures fully. Early reconsideration of such matters would be imperative to free on-the-spot leadership from undue fears or delayed legal entanglements, while retaining reasonable standards of legal responsibility. Adequate documentation of decisions and actions might be difficult, and guidance setting forth practicable standards would be desirable.

A major continuing Federal function would be to exert its powers and influence to achieve a reasonable balance between a high degree of local autonomy and wider nationwide needs, as well as a similar balance between meeting current urgencies and conserving minimal resources for starting longer-run rehabilitation efforts. During Step 1, it is likely that Federal action would be largely in the form of proclamations and guidance, but to keep these credible, it would be essential to establish a voluminous flow of information from all relevant sources, and a crisis-monitoring activity adequate to crosscheck, validate and summarize incoming reports. Communications requirements would thus be extreme, involving a network that would be expanding even though the Federal presence might be visible to the general public only through the one-way broadcast of legal pronouncements, situation reports, and policy guidance. Step 1 functions might be summarized so as to authenticate emergency powers and leadership, to collect information, to issue general status reports, and to provide guidance for organizing to meet expanding functional requirements. The challenges are, first, to survive and conserve and, second, to establish an institutional framework viable enough to support Step 2.

Step 2 would begin as nationwide needs and resources were more clearly and generally perceived and the Federal Government could begin to identify and rank major national problems, to evaluate institutional alternatives, to refine, correct, or update broad provisions of standby legislation or initial proclamations, and to deal with major unanticipated developments or clashes between divergent interests. Major Federal tasks and challenges of this phase include:

1. Assessing national resources and needs.
2. Identifying emergent organizational and institutional problems.

3. Conserving materials, facilities, and skills that are in great demand and in imminent danger of becoming bottlenecks or supply crises.

4. Establishing adequate local-to-Federal information flows needed to provide accurate, up-to-date perceptions of relative needs and organizational alternatives.

5. Organizing and establishing skeletal agencies intended to take over detailed control functions in Step 3.

6. Coordinating redistribution of scarce materials or skills to balance current or local needs against longer-run or nationwide requirements.

7. Identifying facilities, skills, and vital networks that should be treated as nonrenewable resources because long lead times would prevent replacement until much later in Step 3 or 4.

In the absence of an adequate Federal presence that is equipped to undertake centralized control, these functions must be left largely to state and local agencies for implementation, with Federal policies being transmitted through priority pronouncements and general guidance. Federal credibility and influence would depend on having and demonstrating realistic perceptions of regional and national needs. To insure this, many facets of the rapidly evolving (and perhaps deteriorating) situation should be monitored and carefully assessed in formulating policy and guidance. Policymakers should recognize that:

1. A prerequisite for Step 3 is surviving Step 2, and thus great sacrifices of future potential might be necessary to bring an organized and viable society to a condition permitting implementation of a rational, efficacious system of Step 3 controls.

2. The pace of reconstitution would vary greatly from area to area, and some preliminary versions of Step 3 controls can be initiated in relatively undamaged areas well before damaged areas.

3. Questions of equitability weigh less than survival and national welfare, so recovery might favor relatively undamaged areas, having high potential for rapid expansion of production, over damaged areas. Remedying many individual inequities can best be deferred, particularly if recompense is promised under general policy pronouncements.

4. Remaining alert to the possibility of unexpected changes in institutional response and relevance would be important. The performance of venerated institutions such as the family, the school system, the market system, and other economic, political, and societal institutions should not be taken for granted. The behavior of institutions under postattack conditions might prove less predictable than that of individuals, despite extensive concerns with maladaptive social behavior in the literature on postattack problems. Moreover, the tensions of the crisis might generate institutional innovations worthy of support and preservation.

5. Shortages relative to preattack consumption might prove insignificant because of greatly reduced demand resulting from geographic, demographic, economic, and institutional changes. Some items (e.g., scrap metal and passenger autos) might survive greatly in excess of essential postattack needs, and related production facilities could be considered for early conversions to more essential uses. Crude oil supplies may prove adequate, although refining might require the use of an industrial strategy (see Chapter V). High-value byproducts might be luxuries that can be long deferred. Processes that are economically unfavorable in the preattack period might be acceptable in the early postattack period.

6. Step 2 would probably be the most critical period for economic and societal viability, and surviving this step without exhausting all essential resources might be the dominant objective. In particular, this means that a rapid return to preattack conditions might not be a useful goal. Postattack conditions would set new values that should guide recovery management. The effects of standby measures such as the initial price freeze should be watched carefully. On the other hand, great uncertainties concerning current conditions and future changes would generate market instability and encourage speculation. Selective price controls would probably be needed, accompanied by selective rationing with quick responses to suppress significant black markets. This also means that Step 2 could tolerate considerable inefficiency in the interests of survival—provided that essential resources were not squandered and the future not discounted excessively.

7. Major attention should be concentrated on: establishing unprecedented information flows; providing for the evaluation and synthesis of the reports received; reviewing preattack plans for relevance, operational content, and

realism; and revising them thoroughly as background for Step 2 guidance and Step 3 implementation.

Step 3 is the condition that has been extensively covered in research on postattack recovery management. It presumes that the Federal Government has developed the agencies, staff, facilities, and presence to assume an unprecedented degree of control over recovery efforts. It is likely that the centralized controls would include some variant of all the functions performed during World War II and the Korean Conflict, augmented by additonal authority and responsibility for close controls over investment decisions and over the allocation of all resources of critical importance. Such resources would include facilities, material inventories, and skilled labor. Accepted and proposed plans provide for the organization of new agencies to undertake such functions and for the delegations of various areas of responsibility. For further consideration of the problems expected and the methodology for dealing with them, one must refer to the research reports. It can be fairly stated that most of this research has recognized that the exact conditions prevailing as Step 3 starts would greatly condition the appropriate responses, and that it would be futile to preplan activities in too great detail. Because of changes in the strategic situation, this position is probably more valid now than it was earlier, when much of the research was carried out. Thus a detailed review is not appropriate here. It may suffice to direct attention to some of the persistent doubts about the appropriate treatment of certain troublesome areas. These include:

- Establishing ownership, solvency, creditworthiness, and industrial mangement authority, and certifying (by fiat, where necessary) the resolution of conflicting claims to ownership or authority.
- Dealing with the insolvency of individuals, corporate divisions, or corporations.
- Designing feasible principles for selective debt moratoria that do not exacerbate the problems of debt resolution, debt clearance, and insolvency.
- Unemployment, underemployment, overemployment, skill shortages, mobility requirements, and incentives including risk and other premium pay practices.
- Problems of priorities and priority feedback loops or interdependencies, including decisions to defer reconstitution of some areas in favor of other areas, and decisions such as whether to remove salvageable equipment or leave it for subsequent use after relocation in an abandoned area.

- Problems of costing alternatives.
- Principles for selective controls of withdrawals from bank deposits or liquidation of other financial assets.
- Principles for loss equalization, including questions of how to treat postattack windfall gains and losses, secondary losses (e.g., of debtors), when to announce principles and standards, and when to begin reimbursing losses.

Most of these uncertainties in extant plans represent familiar questions of emergency or contingency planning, abbreviated as: Who, When, Where, With what and How.

In summary, Step 3 presumes a detailed capability to determine and evaluate the needs and capacities of specific products and production processes for essential items, and the ability to control the usage of essential goods and services in nonessential production. It also presumes an ability to provide controlled economic services to organizations and individuals. The level of control envisioned in Step 3 while using the currently planned control structure could be a massive expansion of this structure beyond that of World War II. This suggests that the ability to maintain the economy with Step 2 measures (generalized control) until Step 3 can be implemented will be a critical consideration.

Step 4 relates chiefly to the disengagement of government from business and a return to normal free enterprise. Some of the questions related to Step 3 may still need final disposition in Step 4, or even later. Controls should not be terminated abruptly, and preplanning would be required to phase them out with minimal disturbance to the recovering economy. Shrinking the emergency bureaucracy and reemploying terminated persons in the expanding private sector might be a special problem. Reorganization of surviving or reconstituted businesses might require precautions to see that emergency-spawned enterprises could survive their emergence from Federal controls and protection and successfully find niches in the competitive business world. Mergers, divestments, and other regroupings might be desirable, guided by compromises among conflicting principles of antitrust philosophy and efficiencies of scale.

[illegible] INDUSTRIAL RECOVERY

Characteristics of Early Industrial Recovery

[illegible] more detailed attention [illegible]. As discussed earlier, [illegible] by the nation and the [illegible] is directed toward [illegible] economic policies. In particular, [illegible] short-term domestic recovery [illegible].

While the specific [illegible] in detail, the focus of attention in this study has been the short-term [illegible] policy. The objective of this policy was [illegible] economy that is capable of supporting [illegible] national objectives. In this context, the concept of "rationalization of production and use," formulated by Speer[10] in World War II Germany, is particularly applicable. The concept explicitly recognizes that, in the presence of significant resource constraints, both production and demand must be adjusted to achieve feasible national objectives. The demand considered refers not only to demand in general but also to what under other circumstances would be considered "essential demand." Thus, under this concept, essential demand is not specified independently of the feasible limits of production.

In the context of nuclear war, it appears desirable to relabel this basic concept to focus attention on postattack recovery considerations. The label "rationalized recovery, production, and use" calls attention to the fact that, following a large-scale nuclear attack on the U.S., a significant fraction of the available resources would be diverted to bring additional production capacity on line (primarily repair and expedient construction). Thus, a balance would have to be achieved among three factors. The severity of the problems in balancing the requirements at early times by conventional means would probably lead to the widespread adoption of expedients and emergency measures, with reduced efficiency in production and investment and restriction of consumption to most essential uses.

The implications of this approach for government control at early times are substantial. It will not be enough to specify "essential industry" and allow production to continue to the extent possible. Under the "rationalized" approach, the type and

[illegible] would be specified in detail by government at earlier [illegible]. This will be necessary under certain forms of attack, [illegible] may not be sufficient to allow "excess" production or [illegible] products.

[illegible] of current concepts and capabilities provides [illegible] under current programs, implement this [illegible]. Successful implementation would require [illegible] and other industrial defense preparations [illegible] prior to, during, and immediately after [illegible].

[illegible] can be identified. [illegible] in a fragmentary fashion, however, [illegible] a short term recovery policy [illegible] organized in terms of the operational [illegible] where they could be applied. Operational [illegible] crisis, a transattack period, an [illegible]. If properly coordinated, the actions [illegible] the performance of measures taken in [illegible].

[illegible] specific objectives for [illegible]. With respect to industrial production, the [illegible] required measures over all periods for [illegible] will be quite different from the measure [illegible] for a given sector has been called an [illegible]. [illegible] industrial strategy is a coordinated series of [illegible], and other attack to produce and use the product [illegible] in order to meet national objectives. [illegible] associated with the short-term domestic recovery policy, [illegible] emergency and expedient measures to meet [illegible].

[illegible] of the set of measures that are appropriate for any [illegible] objectives requires detailed examination at the systems [illegible]. This has been done at the appropriate level of detail to [illegible] strategies. Past studies have examined several industries in a preliminary [illegible] 11,12 Another study is currently investigating part of the U.S. petroleum refining

Medical care

problem in greater depth.[13] The information that is available, however, is helpful in providing a partial basis for setting the requirements for continuity of government.

Table 4 presents the outlines of possible industrial strategies for two important sectors (petroleum refining and metal fabrication). The listing, while still quite general, does illustrate the similarities and differences to be expected in strategies of disparate sectors. Both depend upon major modifications in use—the petroleum refining strategy upon an emphasis on the use of diesel oil as motor fuel,* and the metal fabrication strategy on product substitution. The sample strategies differ in the means to be adopted to provide the necessary levels of production—petroleum refining being based on the assembly of prefabricated parts of crude stills, and metal fabrication on expedient hardening and expedient repair of production facilities.

More detailed examination shows how the strategy helps to define and coordinate specific defense measures. In the petroleum refining case, the peacetime measure of "large inventories" and the crisis measure of "innovative storage" represent measures designed to provide the minimum supply of fuel needed in the early postattack period, until production can be resumed using prefabricated (or repaired) crude distillation units (in less than 3 months). Measures might consist of larger inventories of refined products in dispersed locations and the use, in crisis, of expedient refined product storage such as railroad tank cars, tanker ships, refined product pipelines, or even crude product pipelines. It is interesting to note that the period during which the nation would have to function on inventories and to repair or reconstruct its refineries (i.e., the first 3 months) is about the same period for which current doctrine suggests that the Federal Government would not be able to undertake "central control" of the economy.

The coordination of measures across operational phases can also be illustrated by Table 4. The peacetime measure of "replacement components" and the crisis measure of "dispersal of mobile equipment and personnel" are necessary prerequisites for the rapid "assembly of prefabricated components" in the early postattack period. Heavy materials-handling equipment normally to be found in the vicinity of existing refineries will be needed to clear debris and to install major components of crude distillation units. Survival of a significant fraction of refineries and refinery construction workers would be needed for the efficient repair of old units and the assembly of new ones.

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*And possibly straight-run (i.e., low-octane) gasoline, with engine adjustments.

Table 4

KEY MEASURES IN INDUSTRIAL STRATEGIES

Industry	Peacetime	Crisis	Transattack	Early Postattack
Petroleum refining	Large inventories Replacement components User equipment design Personnel shelter	Innovative storage Dispersal of mobile equipment Worker dispersal	Protection of workers Protection of inventories	Assembly of prefab components Rationalized use Engine Salvage
Metal fabrication	Dispersed construction Structure hardening Personnel shelter Product standardization	Expedient hardening Fire protection Worker dispersal	Control of plant fires Protection of workers	Expedient repair Product substitution Expedient production

"Rationalized use" in early postattack refers not only to the control of usage but also to the identification and maximum use of diesel prime movers, tractors, etc. This also suggests that "dispersal of equipment" in the crisis phase should include protection of a fraction of the existing diesel units to be used in the postattack period.

2. Relationships to Continuity of Government

In addition to added planning requirements in peacetime, consideration of industrial strategies helps to set transattack and postattack requirements for measures needed, timing of measures, authority, regulations and guidance, information, and supporting and financial requirements. The following discussion illustrates some of the principal governmental requirements. It is to be expected that many other requirements would be uncovered during the in-depth planning process that should be part of any industrial preparedness program.

Table 5 specifies some of the government requirements associated with several postattack measures that could be part of an industrial strategy: (a) expedient production; (b) utilization of labor; (c) salvage and cannibalization; and (d) expedient repair and construction.

Expedient production refers to the making of an essential product by modified (usually simplified) systems or processes to obtain the needed amounts of product at the earliest possible time. The government's initial activities (Step 1) would be directed toward protection of industrial assets, establishment of the authority for use, other support for continuation or early resumption of essential production, and initiation of information collection on production capabilities and needs. The success of government in meeting these requirements would appear to depend heavily on the presence of in-place production and other directives and on the existence of adequate industrial facility emergency plans.

Because of the need for efficient use of resources and products, government control (Step 2) will have to be asserted promptly in essential production sectors. Self-certification schemes are unlikely to serve the purpose for essential production following widespread nuclear attacks on industry. Not all possible production of essential sectors may be sustainable or even desirable (depending upon the general economic policy—see Chapter III). Expedient production, since it is likely to be inefficient, should be limited to minimum needs. The type and level of production cannot be determined by the facility manager, but must be assessed early by the government, based upon national and regional requirements.

Table 5

GOVERNMENT REQUIREMENTS
ASSOCIATED WITH INDUSTRIAL STRATEGIES STEPS

Postattack Measure	Government Requirement	Postattack Recovery Step*
Expedient production	Production type and level	2, 3
	Feasible limits of production	2
	Support needs and schedules	2, 3
	Financial subsidies	2, 3
	Authority for production (delegation of)	1
	Information collection and evaluation	1, 2, 3, 4
	Production directives	1, 2
Utilization of labor	Allocation procedures	2
	Authority for labor control	1, 2
	Priorities for labor resources	2
	Transportation and hosting	2, 3
	Information and evaluation	1, 2, 3, 4
	Monitoring and control	2, 3
	Payment of wages and costs	2, 3, 4
	Resettlement	2, 3, 4
Salvage and cannibalization	Assessment of needs and resources	1, 2
	Authority for acquiring private property	1, 2
	Recordkeeping	2, 3, 4
	Compensation	2, 3, 4
	Control and scheduling	2, 3
	Acquisition procedures	2, 3
Expedient repair and construction	Priorities for repair and construction	2
	Modified regulations for expedient repair	2, 3
	Authority for controlling efforts	1, 2, 3
	Supervision and scheduling (industrial areas and fallout areas)	2, 3
	Records	2, 3
	Payments and credits	2, 3
	Initiation of preparatory actions for strategies	1, 2

* Four phases of postattack recovery:

1. Survival—decentralized control
2. Emergency Federal control
3. Peak Federal control
4. Relaxing Federal control—return to normalcy

The capability of government to make prompt determination of needs would be greatly assisted through peacetime and crisis industrial planning. A prototype planning system for the production of essentials during crisis relocation has been described in earlier report.[14] The system would result in a plan based on an initial specification of production requirements at the Federal level, with implementation in facilities conducted by regional and local government and industry. A plan of this type, if implemented during a crisis, could provide a basis for prompt decision in the early postattack period.

Utilization of labor during the early postattack period is likely to be subject to controls as stringent as those for other resources. After establishing the necessary authority over the labor force, the earliest government efforts (Step 1) would be directed toward assembling and returning the regular labor force to surviving essential industrial facilities that were continuing or resuming production. This process would be aided by crisis plans and actions (such as crisis relocation) that included some form of organizational relocation or other means of assembling employees rapidly after the attack. These efforts would have to be coordinated with areawide recovery efforts, including the safety (e.g., radiation protection) and hosting of the labor force. Areawide recovery would also require the use of labor forces not associated with essential production.

Following a preliminary status evaluation and provisional assignments of production goals, prompt actions (Step 2) would be required by government to organize and allocate remaining qualified labor to functioning essential production facilities. Such labor might previously have been assigned to essential facilities that were damaged in the attack or to nonessential industries not scheduled for early production. Possible regional variations in postattack industrial activity due to the attack pattern and recovery policy might require the transportation and resettlement of significant numbers of the labor force to new regions. Government working with industry groups would have to organize and implement such movements and resettlements and provide for assimilation of the work force into alternative facilities and industries.

In order to accomplish such efforts on a time scale consistent with the early implementation of industrial strategies, peacetime and crisis planning and implementation would be needed. This effort could range from general determinations of interchangeability of skills to specific personnel "exchange" plans among industrial facilities. For strategies including expedient production, readiness could include orientation and training of the labor force in the expedient industrial processes.

Salvage and cannibalization refers to the recovery of needed materials and equipment from damaged and undamaged facilities for transfer to facilities to be used for essential production or for final consumption. Following a heavy attack on U.S. industry, this effort could be massive in scale and would involve the wholesale acquisition of private property for other public and private use. Earliest efforts (Step 1) would involve the identification and protection of such materials so that they could be scheduled for salvage and cannibalization at an appropriate later time.

In the next step (Step 2), survey information would be evaluated in the light of provisional production requirements, and decisions would be made as to the items to be recovered and the associated performance schedules. These actions would then have to be coordinated with areawide efforts and recovery, including transportation and transportation routes, materials handling equipment, and radiological decontamination.

Such an operation would require close joint planning and action by government and industry before and immediately after the attack, including the development of survey and protection procedures, authority for action, recordkeeping, and compensation guidelines.

Because of its size and complexity, this is not a problem that can be treated in general. It must be constrained and focused by some planning mechanism such as an industrial strategy in order to bring to bear the planning skills and technical knowledge at the required level of detail. For instance, in the petroleum refining strategy, salvage might be restricted to a few hard items (e.g., pumps) that might increase the throughput of expedient crude units.

Expedient repair and construction refers to simplified repair and construction efforts (R&C) for the purpose of bringing the minimum essential production capacity on line quickly. Simplified R&C would include methods not acceptable as part of peacetime standards. Where necessary to achieve rapid results with inadequate materials, peacetime requirements for environmental protection, health, and efficiency would be reduced. In many cases, the resulting production facilities and approaches would be useful only for a short period (months to a few years), until conventional, efficient facilities were built.

Where such efforts were part of an established industrial strategy, initial government actions in the early postattack period (Step 1) would be to authorize and support the assembly of resources preparatory to initiating the strategy. In the petro-

leum refining strategy, government would assist industry teams in an initial survey to determine the status of required components and materials (including remotely stored materials), site conditions, transportation, and supporting networks. Government would also assist in identifying and assembling the skilled work force needed for specific R&C efforts. Local governments, under the guidance of regional and Federal governments, would control all local R&C work while conserving required skilled resources for application to specific industrial R&C tasks.

After a preliminary determination of needs by government (Step 2), decisions would be made on the extent to which the industrial strategy and associated R&C efforts were to be implemented. Based, to the extent possible, on in-place plans, work would be initiated according to government-assigned priorities for materials, transportation, labor, etc. Continuing efforts would be required to coordinate such industrial efforts with the required areawide recovery efforts.

3. Summary Observations

Although the study of possible early postattack industrial problems is still far from complete, a number of observations about the role of continuity of government do appear to be in order:

- Following a heavy attack on industry, the Federal Government may have to "manage" the economy much sooner than is currently believed possible. At the very least, the Federal Government must be able to manage the production and consumption of essential products early in the postattack period.
- To meet these requirements, the capability of government at all levels would have to be enhanced significantly, together with a significantly greater preparedness in essential industrial sectors.
- The burden of managing the early postattack production and recovery would be considerably eased by the existence of in-place plans and capabilities for implementing industrial strategies. In fact, following heavy sector-specific attacks, it may not be feasible to meet minimum production needs without the types of preparations envisioned in industrial strategies.
- Following heavy industrial attacks, government might not be able to adopt the approach of just allowing essential production to proceed at a maximum rate. Depending upon the economic strategy and the levels of damage, even essential production might have to be constrained at early postattack times.

- Some of the countermeasures that are part of industrial strategies would require government control and acquisition of private property on a scale not heretofore envisioned. Considerable government efforts would be required during the planning and implementation phases to assure that the process is as equitable as possible and that the long-term consequences to recovery are acceptable.

VI. STATE OF KNOWLEDGE AND SUGGESTED IMPROVEMENTS

1. Critique of the State of Knowledge

Planning for postattack recovery has long been hampered by a general reluctance to contemplate the possibility of a nuclear exchange and, more significantly, to sort out for analysis the myriad of uncertainties and contingency alternatives likely to arise postattack. This has led to sparse funding of requisite planning, which has in turn contributed to further uncertainty and to the low credibility of many plans.

Present plans suffer from several inevitable problems—primarily the lack of specificity, comprehensiveness, and opportunities for pretesting except in limited paper exercises. Formal plans tend to cover (in general terms) functions to be performed, but give little guidance on how this might be done. Most of them do supplement this identification of functions by designating responsible agencies, but such designations are usually based on dubious extrapolations of peacetime organizational relationships.

The plans rely heavily on control measures that were employed in past emergencies (e.g., World War II, Korea, and Vietnam) or in responses to natural disasters. Vociferous critics of all postattack research have attacked such planning as provocative, soporific, and futile, and have denied any possibility of recovery. Although postattack research has failed to uncover any compelling reason for accepting such a conclusion of inescapable doom, such research has emphasized the importance of preplanning and preparedness in improving the prospects for recovery. Admittedly, the efficacy of crisis and precrisis preparedness measures and associated plans would depend greatly on their scale and on the extent and nature of the attack damage.

Another important factor is the speed with which plans could be implemented. It is generally agreed that immediately after an attack the surviving population would, for the most part, be sustained from surviving inventories and that early resumption of essential production would be required to prevent the depletion of supplies from initiating a downward spiral to economic collapse. The dynamics of the recovery process is thus critical. The questions that can be raised regarding reliance on past wartime control measures include whether they could be implemented fast enough, whether they would be adequate to meet the unprecedented trials of postattack circumstances, and whether they would prove flexible enough to adjust rapidly to unforeseen problems and to changes in perceptions or priorities.

Control measures relating to economic stabilization and recovery management include: price/wage controls; rationing; seizure, conservation, and careful allocation of supplies; production limitation orders; mandatory conversion of capacity to essential production; and other innovations requiring a functioning central government with greatly expanded presence nationwide. However, the postattack situation will vary tremendously from place to place, and decentralized decision making would be required to identify and respond to critical requirements in each locality. Moreover, a difficult balancing of local priorities and surpluses against rapidly changing perceptions of national needs would be required. Even if critical networks (e.g., transportation, communications, and utilities) and other parts of the infrastructure (e.g., banking and related transaction-accounting processes) were quickly restored, the flows of skilled workers, supplies, and construction equipment from one area to another would be a significant problem.

The postattack global strategic situation would condition the national strategic options and requirements, and would thus govern the evolution of recovery goals. The alternative recovery policies would require variable recovery approaches and variable mixes of control actions and recovery targets. A highly decentralized authority could not be sufficiently responsive, while an overcentralized authority could be hampered by sluggish response and by loss of credibility.

Past wartime controls were implemented by a complex structure of agencies with greatly expanded presence throughout the country. A central problem was the proper coordination of such farflung activities. The postattack problems are complicated by the time required to establish such agencies and by the greatly increased requirements for, and impediments to, coordination.

An assessment of the present state of knowledge regarding recovery problems and remedies must be concerned with several levels, including basic recovery rationale, general schema for management, specific measures for providing incentives and controls, and establishment of information flows that are adequate for monitoring and revising controls. Knowledge is limited regarding the problem of determining costs and relative values in a mixed-market economy in which normal market imperfections would be greatly augmented by extreme interarea differences, many prices fixed, heavy central procurement, and the need for central guidance (if not complete control) of investment scheduling. The problems of balancing local against national requirements, the immediate future against longer-term priorities, equity against survival and recovery, are especially challenging.

The general design of an integrated set of measures, implementing agencies, and coordination of direction has been only sketchily outlined. The procedures by which problems would be treated are at present unclear.

Individual measures need further specification of decision making rationale, procedural mechanisms, and continuing enforcement, monitoring, and evaluation activities. In price controls, for example, an initial freeze at preattack levels is envisaged, but postattack shortages and economic relationships must be promptly reviewed and factored into price adjustments. Past practice involved applications to price boards for price relief, and they involved agencies, mechanisms, and principles that are unlikely to work fast enough—or as appropriately in a postattack world—to be effective. Moreover, little guidance is available regarding the integration of price policy with rationing, allocations, and other economic stabilization measures. Details are needed on how decisions might be disseminated to the general public or even to those concerned with implementation, how noncompliance would be treated, how grievances or hardship complaints would be heard, and how specific policies would be developed, tested, adopted, and applied locally and nationally.

In general, it must be concluded that far more effort is needed to adjust proposed controls to meet the requirements of managing a heavily damaged postattack economy. The problems of time constraints, coordination of policies, requirements for collecting and analyzing information flows, and maintaining delicate balances will be orders of magnitude greater in the postattack period than they were in past wartime emergencies. Realistic responses to such challenges will require careful reconsideration and revision of past measures and the development of new approaches.

Admittedly, no system can function optimally under such circumstances and uncertainties, but doubts remain that even the traditional measures and plans could function productively in their present state. Lacking are fully developed concepts of operation that are tailored to anticipated needs, operating alternatives, and accepted purpose. The scale of manpower and resources needed to collect, process, and analyze information, to reach and implement decisions, and to follow through in monitoring responses have not been realistically examined. The lack of effort to provide such detail has, of course, stemmed from sparse funding and the difficulties in addressing details when the general rationale and schema have yet to be agreed upon. However, this general lack of readiness cannot comfortably be left to postattack improvisation. If the necessary thought and decisions are so hard to come by in peacetime, can the postattack sense of urgency be counted on to overcome the problems of making correct decisions in the midst of massive damage and economic disruption?

2. Suggested Improvements

The overall needs include:

- o A program of significant size over a considerable period
- o A well-structured approach to research and planning
- o A better understanding of recovery concepts and associated measures
- o An improved technological information base

A major problem in planning for passive preparedness and postattack recovery management has been the overreliance on a piecemeal approach, dealing with specific issues and measures without adequate policy guidance to provide a basis for designing a realistic plan, and without the funding necessary to develop a variety of planning alternatives. A review of past research efforts and plans supports the conclusion that a primary prerequisite for progress would be the establishment of a program of significant size over a considerable period. Coincident with the start of such a program, or as a first step, would be a coordinated interagency commitment to a serious effort and to general policy guidelines concerning levels of politically feasible preparedness measures and well-defined positions on loss equalization, degree of centralization of recovery management, and similar broad issues.

Given a decision to embark on such a program, a second step would be to develop a well-structured approach to research and planning, based on a realistic range of scenarios and an inventory of potential problems, remedies, and requirements (both informational and organizational), as well as issues for intergovernmental concordance. A list of the major issues for resolution or study and of the major uncertainties for special study—or, where appropriate, for interagency consultation—would be a useful result of this step.

Reexamination of traditional or proposed measures to assess their applicability, practicality, and adequacy in postattack circumstances, and consideration of ways to remedy defects in relevant measures or to develop more appropriate substitutes, would establish some directions for research. This review and any subsequent research would suggest new approaches and countermeasures to address significant problems.

In the absence of the desirable program guidance and a well-structured approach, and at least for illustrative purposes, the next few paragraphs attempt to outline a conceivable research program. This outline is more general and taxonomic than would

be desirable (and possible) if the preliminary steps described above supplied better guidance and better structured research approaches. Four research areas are discussed.

A. Policies for Recovery and Continuity of Government

The objective of research in this area would be to develop goals, objectives, and concepts for economic industrial recovery. The following research tasks would be relevant:

- Develop alternative strategic objectives and rationales for a range of possible conflict situations.
- Develop in further detail the overall economic policies (Chapter III), and evaluate their compatibility with the range of strategic situations.
- Identify and describe the economic/industrial and continuity-of-government preparedness measures needed for satisfactory application of appropriate overall economic policies to a range of stategic situations.

The range of conflict situations should include at least those previously noted, with variations including continued, intermittent, or threatened nuclear exchange. Other variations should include increases and decreases in support from allies and potential trading partners owing to conquest, destruction, interdiction of sea lanes, or general worldwide disruption. Strategic objectives might range, as appropriate, from continuing the conflict in overseas theaters to establishing domestic self-sufficiency. Intermediate objectives might include attempting to expand bilateral trade possibilities in the Western Hemisphere—or at least with Canada and Mexico—or to restore some degree of international trade.

Overall economic policies would have to be developed in much greater detail than is presented in this report, and they would be examined for compatibility with postulated strategic conditions and the surviving economic potential. Postulated levels of damage in macroeconomic terms would probably suffice for this evaluation and would provide a basis for elaborating on a general recovery objective.

Preparedness measures that would have been essential or advantageous for overall economic policies could be identified, including measures to assure continuity of government, continuity and support of industrial management, and measures to preserve vital records and technical information or to protect other resources. In particular, the roles of industrial strategies in implementing overall economic policies need to be developed.

B. Continuity of Government Systems Requirements for Supporting Economic Recovery

The objective in this area of research would be to describe and evaluate the nature and dynamics of postattack government actions in support of various economic/industrial recovery policies. Possible research tasks could be to:

- Describe in detail the process by which the government might move from a state of disorganization to comprehensive economic control during the first three steps of the recovery process. (See Chapter IV.)
- Describe the alternative economic measures and actions available to the government, and relate these to the phases of the recovery, including the scope and timing of the measures or actions.
- Evaluate the utility of various measures in this context, and assess the requirements in terms of lead times and other social, political, or economic considerations.
- Describe the information content and flows of communication required to support decisions to phase in or phase out individual measures.

The movement of government from a process of general guidance to one of more complete control (in particular, between Steps 2 and 3) represents a critical transition that is poorly understood. It is essential to define these steps in more detail, to estimate the dimensions of the changes (in magnitude and time), and to assess the feasibility of the process. This process would greatly benefit from careful preplanning, including preselection of agencies and cadres (e.g., reservists) for government efforts. It would also benefit from alternative site selections, communications chains, and associated measures, such as preestablished check lists, indicators, procedures and operational concepts, and sources of expertise. Minimal requirements for sustaining such an expansion--including facilities, personnel, and instructional guidance--should be assessed, and the means of activating the whole process should be outlined.

A description of available measures and actions and the limitations on their applicability would be a useful preparedness measure to facilitate postattack decision making. Such a description should include a list of prerequisites and interrelations of measures and should provide guidance regarding sequencing of preparatory or initiating steps, as well as other considerations affecting time phasing. In addition to general limitations on the effectiveness of individual measures, these descriptions should include considerations of utility, advantages and disadvantages, and requirements in terms of lead times, as well as social, political, or economic preconditions or potentially hazardous consequences.

The phasing in or phasing out of controls raises delicate problems in the effective dissemination of information to the general public and in establishing communication flows among implementing officials and agencies to insure that everything is in place before each change of procedure.

3. Analysis of Specific Postattack Economic/Industrial Measures

The objective of this research would be to develop a more detailed understanding of candidate measures and associated procedures needed for planning. For each selected economic/industrial measure (e.g., price and wage controls, allocations of critical materials, certificates of necessity, guarantees of ownership, and obligation priorities), the following research tasks might be undertaken:

- Describe in depth the characteristics of the measure as related to each step in the recovery process under each overall economic policy.
- Discuss limitations on the application of the measure and its probable efficacy and hazards under the full range of possible applications.
- Estimate resource, personnel, and lead time requirements for implementation of the measure.
- Compare the requirements with present and past efforts, and determine preparedness requirements.

For planning, and certainly for the operational use of each measure considered, a description of the intent and general nature of the measure must be extensively supplemented by detailed descriptions of how it would work under the various stages of the recovery process, under various overall policies, and, where appropriate, under the associated industrial recovery strategies. Details are needed on procedures and other "how, when, where" matters needed for implementation. Recognized limitations on the range of applications need to be described as part of a discussion of advantages and disadvantages, including suggestions regarding the indicators of possible adverse effects and remedial actions.

Planners will certainly need realistic estimates of the resources, personnel, and lead time requirements for effective scheduling of effort. These may vary with the range of applications and the recovery phase.

Information is needed on the possibilities for peacetime or crisis-period preparedness actions that might be essential for the early application of a measure or that might facilitate its implementation. These might merely be informational releases

to the general public, or they might be operating instructions for agencies or cadres that are likely to be involved. They might include the preparation and stockpiling of forms (e.g., for ration evidence) or descriptions of more elaborate readiness actions, including the designation of control sites, collection and storage of relevant information, and full-blown training exercises.

4. Issue-Oriented Studies

The objectives of this research are to identify and assess discipline oriented topics, unexploited bodies of information, and other special studies likely to increase the knowledge and supporting data base for planning and research on economic/industrial recovery. Research tasks might be to:

- Determine the legal and legislative requirements to provide the needed authority for government to act in support of various recovery strategies and time periods.
- Review the history and theory of the social and behavioral characteristics of widespread emergency situations, and relate this knowledge to alternative economic policies and time periods.
- Develop consistent projections of consumption patterns in the U.S. for various policies and time periods.
- Develop overall estimates of staff and other resource requirements for government control, and devise alternatives for meeting such requirements.
- Review historical information and relevant research regarding the range of situations involving local, state, or Federal governments, to identify decision requirements and the substantive information content of decisions.
- Review concurrent work on systems and engineering studies of industrial strategies to determine those activities requiring government action and administration.

As noted previously, much of the authority for government action resides in rescinded wartime or emergency standby legislation and would require legislative initiative. In addition to updating related requirements, a legal status review would examine the authorization required for contemplated activities beyond the scope of precedent and would relate requirements to recovery strategies or steps.

Although studies of the history of major past emergencies (including the oil embargo, past wars, major strikes, and natural disasters) may have only limited

applicability to transattack or early postattack conditions, they may provide valuable insights regarding the performance of stabilization and other control measures contemplated for Step 2, the period of increasing government control.

Projections of consumption patterns would require analysis of, and selective modification of, preattack per capita data and price/income-related expenditure patterns. Modifications would presumably require the anticipation of changes in lifestyle based on the attack severity, the recovery strategy, and the time period.

The total resource and lead time requirements for the government's staffing and organizing to enable it to take on essential duties in managing the economy would exceed all past levels of government expansion. Time-phased requirements must be developed and carefully analyzed to eliminate duplications and minimize the diversion of management talent from industry. Alternative approaches (e.g., computer assistance, drafting retirees, or delegating tasks to supporting civil organizations supplemented by part-time staff) for meeting or further reducing these requirements are imperative.

A review of wartime and other emergency interactions among local, state, and Federal governments would help to identify the types of decisions made at their respective levels, the information on which the decisions were based, and the information flows involved in implementing the policy that was adopted. Although this history would not, in general, be directly applicable to postattack recovery management, it would at least provide a base for useful extrapolation.

Many engineering and systems analytical studies of industries under postulated postattack conditions have been conducted. However, only a few have been conducted within the context of the industrial strategy concept. Those studies that are applicable should be reviewed to identify the explicit or implicit assumptions made regarding government action and administration. The review will provide insights regarding the requirements on government during Steps 2 and 3.

5. Other Issues to Be Addressed

Understanding the issues of continuity of government also depends on the understanding of a range of other issues that are related to the survival and recovery of the nation.

A. Industrial Strategies

Sector-specific industrial strategies appear to be a feasible approach to providing needed production in the early period following a heavy nuclear attack on U.S. industry.

In order to understand and prepare for the use of these strategies, more engineering/economic studies are required. Such studies should include essential industrial sectors such as metal refining, petroleum refining, metals fabrication, and chemicals.

B. Network Consolidation

After an attack, the transportation system (particularly rail and air freight handling) may have sustained sufficient damage to cripple many carriers. Peacetime operations provide considerable redundancy in the form of competing lines. Elimination of some of the redundancy may force the consolidation of surviving segments in order to avoid the complexities of extensive interline operations, bypasses, and other adjustments.

The power grid and the communications network may require some reintegration. Can this be accomplished by private initiative and temporary intercompany arrangements, or should mergers be encouraged, or should nationalization of certain segments or functions (e.g., as for AMTRAK) be considered?

C. Reemployment

Industrial disorganization will leave many people unemployed despite labor shortages. Expanded government functions will lead to an increase in government employment along with the increase in the unemployed. What plans should be made for rapidly rechanneling the idle hands into essential activities? Could the peacetime Department of Labor handle this in normal ways, or would there be a massive problem in retraining, forcible relocation, and other manpower planning?

D. Tax Revision

Loss of property, death of owners, and other problems will greatly reduce revenues of local governments from property taxes. Income shifts and general problems with lost records, suspended dividends, and other difficulties will probably reduce corporate and individual income tax collections disproportionately. Rate revisions or consideration of other tax measures (value-added tax or national sales taxes) may be needed.

E. Changing Environmental Concerns

Some of the environmental concerns of peacetime will be still worth safeguarding, although they may be entirely overshadowed by the problems of decontamination and other effects of the attack. Some review of chemical hazard problems, however, may be desirable in order to enhance peacetime and crisis countermeasures and to identify hazards that might be greatly aggravated by effects of the attack.

F. Changing Societal and Institutional Sanctions

The disruption of families will be widespread. Although widespread antisocial behavior is not expected, because of the dominance of the emergency, one can expect new types of antisocial movements and opportunistic groups who will seek to profit from particular circumstances, including loopholes or weaknesses in enforcing various controls. Black-marketing, fraud, bribery, forgery, and other varieties of crime are likely to increase, given the expanded opportunities. EEOC, OSHA, and consumer safeguards will probably receive scant priority, but some aspects of such concerns may warrant preservation efforts.

G. Emigration and Immigration

Depending on employment and other opportunities for particular groups, flows of individuals across national boundaries may be particularly significant as long as the borders are not closed militarily. In modest proportions, these movements might be desirable. However, some consideration might be given to possible threats of infiltration, sabotage, or terrorism. The massive displacement and relocation of urban populations will by itself complicate election procedures, and voting eligibility might become controversial. Efforts to plan for regularization of such procedures might be useful in postattack or even CR planning.

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APPENDIX

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Center for Planning and Research, Inc., Palo Alto, CA November 1980, pages, DCPA01-78-C-0227, Work Unit 2313-E

The need to control economic/industrial activities must shape government actions prior to, during and after a nuclear attack. Recent changes in the strategic environment and newly recognized requirements for early recovery demand modification of existing economic/industrial policies to encompass continuity of action and succession of authority in the private sector including industry, finance and other support services. Requirements are discussed dynamically under evolving environments and alternative policies appropriate for different phases of postattack recovery.

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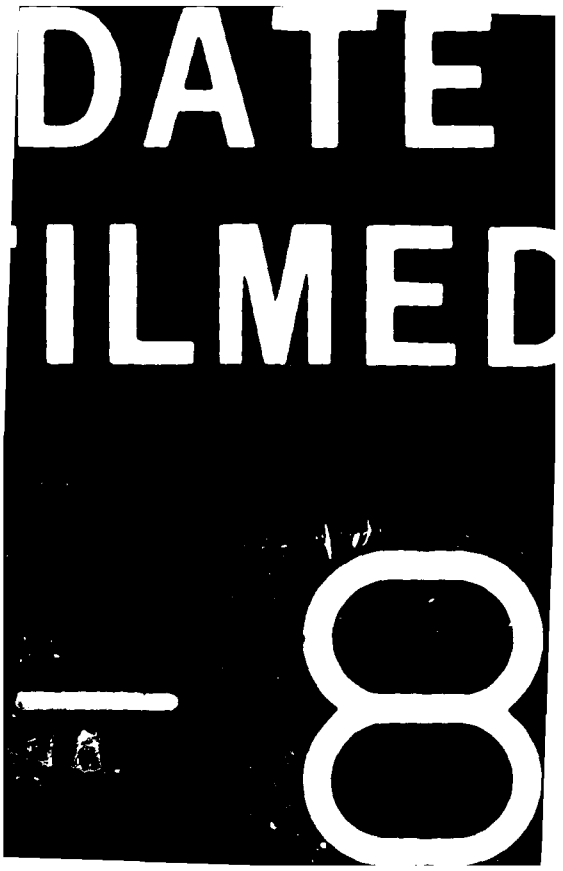
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